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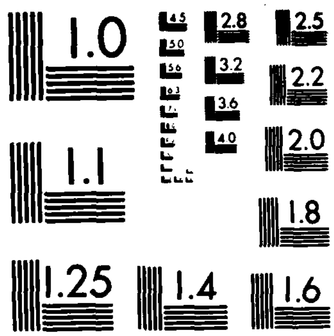

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THE APPLICATION OF THE COMPUTER SUPPORTED NETWORK ANALYSIS SYSTEM (CSNAS) TO ACQUISITION MANAGEMENT AS APPLIED TO THE PRECISION LOCATION STRIKE SYSTEM (PLSS)

THESIS

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Captain, USAF

AFIT/GLM/LSY/86S-29

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THESIS

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

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Requirements for the Degree of

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Cary Gray, B.S.

Captain, USAF

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Abstract

Weapon system acquisition (WSA) is a lengthy and complicated process which is affected by numerous internal (managerial) and external (environmental) considerations. A program manager must manage and balance these often conflicting requirements to ensure the program remains on track; but often decisions are made without full knowledge of the potential program impact. During the past 25 years, Department of Defense (DOD) weapon system acquisition program managers have used many networking tools to help them plan, schedule, track, control, and report the schedule progress of their programs. Because of the myriad of applications, no "superstar" network has emerged that could capture the DOD spotlight -- but recently, a new candidate, the Computer Supported Network Analysis System (CSNAS), has appeared. Because it is DOD-owned and operated, and because of its portability, it promises to provide unusual flexibility and versatility by attempting to standardize and modularize networking applications in DOD projects.

This investigation evaluates the contribution CSNAS makes to the management of weapon system acquisition by applying it to an existing Aeronautical Systems Division

(ASD) program -- the Precision Location Strike System (PLSS).

The analysis was accomplished by using two separate data sets of PLSS projected schedules to create two series of ten yearly CSNAS networks and schedules. Networks were higher-level managerial events, activities and milestones which were important in the WSA process of PLSS.

The analysis centers on comparisons between CSNAS and "classic" networking applications; its similarities and differences, and how effective it is at highlighting discrepancies and providing program managers with a new management and briefing tool which should help manage WSA and other less involved DOD projects.

The results of this investigation indicate that CSNAS is an effective networking application which is useful throughout the entire spectrum of project management.

THE APPLICATION OF THE COMPUTER SUPPORTED NETWORK ANALYSIS SYSTEM (CSNAS) TO ACQUISITION MANAGEMENT AS APPLIED TO THE PRECISION LOCATION STRIKE SYSTEM (PLSS)

I. Introduction

Statement of the Problem

A weapon system acquisition is a lengthy and complicated process which is greatly affected by numerous internal (managerial) and external (environmental) considerations. A program manager must manage and balance these often conflicting requirements to ensure the program remains on track, but often decisions are made without full knowledge of the potential program impact. During the past 25 years, Department of Defense (DOD) weapon system acquisition program managers have used many networking tools to help them plan, schedule, track, control, and report the schedule progress of their programs. Because of the myriad of applications, no "superstar" network has emerged that could capture the DOD spotlight -- but recently, a new candidate, the Computer Supported Network Analysis System (CSNAS), has appeared. Because it is DOD-owned and operated, and because of its portability, it promises to provide unusual flexibility and versatility by attempting to standardize and modularize networking applications in DOD

projects. To properly evaluate the contribution CSNAS may make to the management of weapon system acquisition requires an empirical examination into an existing Aeronautical Systems Division (ASD) program -- the Precision Location Strike System (PLSS).

Background

This section provides the reader with a background in several key areas which are important to understanding this research effort. The process moves from general to specific and from theory to application. These areas of introduction are respectively: (1) networking, (2) the Computer Supported Network Analysis System (CSNAS), (3) the weapon system acquisition (WSA) process, and (4) the Precision Location Strike System (PLSS).

Networking

Introduction. Department of Defense (DOD) weapon system acquisition program managers have many management tools available to help them properly plan, schedule, control, track and report the status of their programs. For over a quarter of a century, enlightened managers have been managing their acquisition process and other important projects through the use of numerous computer software networking techniques, schemes, and analysis programs. Although these techniques have often been credited with contributing to the development of complex weapon systems in

the minimum time and at the minimum cost, many other development systems continue to exceed their initial and subsequent update estimates in terms of both cost and time. Part of the reason for this is the extremely long acquisition process, the changing nature of the threat, the rapidly changing state of technology, changing Presidential administrations and their national direction, Congressional "porkbarreling" to help local industries, and the escalating expenses of bringing a new weapon system into operation.

Functions of Management. Planning, scheduling, and control are three of the most important functions of management and the program manager has long been seeking the ultimate technique to accomplish these functions more effectively, particularly when a complex set of activities, functions and relationships is involved (13:3). Planning involves the logical formulation of objectives and goals that are subsequently translated into specific plans and projects. Scheduling, on the other hand, is the creation of a timetable to meet specific objectives at a certain time (13:4). Included in the schedule is an estimate of the duration the activity will require. Finally, control is the process of regulating or directing the project by periodically comparing actual to planned progress (16:135).

A very important part in this process is how well the manager has instituted a mechanism that can trigger a warning signal if actual performance is deviating from the

plan. Deviations may be in the form of costs, schedule, performance or any other measure of effectiveness deemed appropriate by the manager. If such a deviation is unacceptable to the manager, corrective action must be taken to bring performance back into compliance with the approved plans. In other cases, the manager may have to develop alternative plans so that a viable correspondence between plans and performance can be maintained. Truly successful planning, therefore, should include an appropriate, economical, and effective system of control which is based on the principle of management by exception. That is, the need for corrective action should arise only in exceptional situations, and that in most cases, performance should be in conformity with the master plan (13:1-6). These two concepts (an integrated planning, scheduling, and control system and management by exception) provide the philosophical foundations of Program Evaluation and Review Technique (PERT) and Critical Path Method (CPM) network models and, as a result, several prominent management values of networking can be highlighted (23:435).

<u>Value of Networking</u>. The networking models are extremely useful for the purpose of planning, monitoring, analyzing, scheduling, evaluating, and controlling the progress and completion of large and complex projects. Basic networking methodology involves two related concepts: an event, and an activity (23:433). An event is something that happens at a particular point in time while an activity

is something that happens over time. Therefore, events signify the beginning and the end of an activity.

Primarily, PERT/CPM was designed to eliminate or reduce production delays, conflicts, and interruptions in order to coordinate and control the various activities comprising the overall project and to assure the completion of the project on the scheduled date. The complex projects for which networking has been developed typically consist of many highly interrelated activities and events which make coordination and control of the entire project especially difficult. These projects and systems are organized into paths of activities and events, many of which are sequential while others occur simultaneously. Additionally, networking methodology may also include the use of probability measures to determine the expected duration times for all activities subject to time variation. Computer programs have been devised to facilitate the computation effort of analyzing these large activity networks.

The advantages of networking are numerous. First, networking provides a way for the manager to require that schedule planning be done on a uniform and logical basis. It provides both a means for specifying how planning is to be done and to follow-up to see that it actually has been done. Next, networking provides the manager with an approach for keeping planning up to date as the work is accomplished and as conditions change. Also, networking

provides the manager an ability to forecast -- to foresee quickly the impact of variations from the schedule and to take corrective action in anticipation of trouble spots rather than after the fact. Finally, networking is an informational and communication system that provides status reports or developments as they occur throughout the entire project providing a basis for communications among the people involved in the project (23:433). The result is often a smoother flow of information and better coordination in the organizations involved. These are several of the key values of networking which command the program manager's attention. While all values are important, many project managers experienced in the successful use of networks, feel that the major advantages of the technique is in the initial planning stage of the project (4:414).

Disadvantages of Networking. Networking, like any other management technique, is not without its faults and several disadvantages should be highlighted. First, network planning is difficult because of possibly inaccurate or unreliable input data. If the project is new, then often the tasks have never been performed before. Second is the difficulty in getting people to understand and to manage through the use of the network's schedules. Too often it is used only to document, or perhaps to protect. Third, the delay between data-gathering, data entry, and generation of a new schedule may make decision-making inadequate or ineffective. Finally, the original time needed to create

and keep revising the network may require more resources than the project can afford in terms of time and people (13:107).

Origin of PERT. When one thinks of networking, invariably, PERT and CPM come to mind. While PERT and CPM have the same general purpose and utilize much of the same terminology, the techniques were actually developed independently. PERT was developed in 1958 by the United States Navy Special Projects Office in conjunction with Booz-Allen & Hamilton, a management consulting firm, for the Polaris missile program (23:43). It was devised as a method for planning, scheduling, and controlling unique, complex projects comprised of many highly interrelated activities to be performed over a fixed time horizon. The Polaris program had over 60,000 definable activities which had to be accomplished by over 3800 contractors, suppliers, and government agencies (13:1). Since many jobs or activities associated with the project had never been attempted previously, it was difficult to predict the time to complete the various jobs or activities. Consequently, PERT was developed with the prime objective of being able to handle uncertainties in activity completion times. PERT did this by including three estimates of duration for each activity; the most optimistic, the most likely, and the most pessimistic. Then through the use of the Beta distribution of activity times, these three time estimates are reduced to a single expected time and a variance.

Origin of CPM. In 1957, another technique, Critical Path Method (CPM) was developed primarily by the DuPont Corporation and Remington Rand to provide time/cost trade-offs in connection with building, overhauling and maintaining chemical plants (13:2). The name "critical path method" suggests the identification of the critical or longest path through the project network and the use of it to exercise managerial control on the progress of the project. Usually only about 10% to 20% of the jobs in a major program control the time needed for the whole program (8:9). Any delay in these critical jobs will delay the final completion date. The program manager tries to insure that the necessary resources for these critical jobs are available when required, insuring that the entire project can be completed in its critical path time. When problems emerge which could potentially delay the project, generally they do not include the entire scope of operations. As appropriate, the program manager can allocate additional resources in an attempt to shorten the durations of some of the related activities, permitting the project to be completed in less time and possibly at less cost than would be involved by putting the entire project on an across-the-board crash recovery basis (8:5).

There is always at least one continuous chain of these critical jobs running through every program from start to finish and this chain is called the critical path. Proper control and manipulation of the jobs that make up this

critical path can give the manager visibility over the time and costs involved in an entire project -- regardless of its size. Because CPM was used where job or activity times are considered to be known, it offered the option of reducing activity times by adding more workers and/or other resources, usually at an increased cost. Thus a distinguishing feature of CPM over PERT is that CPM enabled time and cost trade-offs for the various activities in the project (4:404-408). These trade-offs involved "crashing" the networks time and time again to determine the optimum point where time savings were affordable.

Differences. The PERT and CPM models are similar in terms of their basic structure, rationale and mode of analysis. However, in general, two distinctions are made between PERT and CPM. The first relates to the way in which activity times are estimated and the second concerns the cost estimates for completing various activities. The PERT activity-time estimates are probabilistic (three different time estimates, based on the concept of probability of completing various activities, are made for each activity). CPM, on the other hand, makes an assumption that activity times are deterministic (i.e., under specified conditions, a single time estimate is made for each activity). The second usual distinction is that while in PERT the activity costs are not explicitly provided, the CPM model does give explicit estimates of activity costs. Furthermore, in CPM, two sets of estimates are possible. One set gives normal

time and normal cost required to complete each activity under normal conditions. The second set gives crash time and crash cost required to complete each activity under conditions that gain reductions in the project completion time through the expenditure of more money. The purpose of this alternate estimate is to enable the program manager to obtain a clear picture of the costs associated with deliberate accelerations of certain tasks in an effort to shorten the project completion schedule (16:136).

Network Evolution. PERT/CPM is partially evolutionary and partially a new creation. It draws upon bar charting and milestone reporting systems -- long familiar to a program manager. The simple bar chart shows only the start and finish times of the tasks involved in completing the overall project. It does not show significant relationships or milestones or events within a task which could be used for exercising on-going control. The milestone chart is an improvement over the bar chart because it identifies significant milestones or events and shows dependencies within tasks. However, the milestone chart still does not show interrelationships and interdependencies of the events among the tasks. This deficiency is eliminated through the use of PERT/CPM networks (16:4).

The concept of task interrelationships and their graphic representation is drawn by inferential analysis from the network approach while the time and cost concepts, the critical path, and the dynamic progress reporting system are

basically new creations. Merger of the evolutionary and the new resulted in a much-improved approach to management planning, scheduling, and control (16:3-4).

As modifications of the initial PERT/CPM concept were made and applications multiplied, as many as 30 other names were coined to describe this approach. But regardless of the name used, the concept has remained fundamentally the same (8:4).

Network Application. In both PERT and CPM the working procedure consists of five steps: (1) analyze and break down the project in terms of specific activities and/or events; (2) determine the interdependence and sequence of activities and produce a network; (3) assign estimates of time, costs, or both to all activities of the network; (4) identify the longest or critical path through the network; and (5) monitor, evaluate, and control the progress of the project by replanning, rescheduling and reassignment of resources (16:135). The central task in the control aspect of these models is to identify the longest path through the network. The longest path is the critical path because it equals the maximum time required to complete the project. It is the sum of the durations of the activities on the path. If, for any reason, the project must be completed in less time than the critical path time, additional resources must be dedicated (e.g., overtime, extra personnel) to expedite one or more activities comprising the critical path. Even then, there is a practical limit to the

amount of time that can be traded for additional cost. Paths other than the critical path (i.e., non-critical or slack paths) offer flexibility in scheduling and transferring resources, because they take less time to complete than the critical path. In fact, a prudent manager can attempt to level the peak resource requirements by shifting non-critical activities from one time period to another. The networking process will highlight to the manager those paths in potential jeopardy. The manager then must take those actions deemed necessary to correct the problem.

Although the concepts, as well as mechanics of PERT and CPM can be used in any type of work, the focus of these models is on one-time projects. That is, these models are particularly suited for the coordination and control of one-time projects.

In most programs, there are a number of different activities which must be performed in a specified serial sequence in order to successfully accomplish the project. Others of these activities may be in parallel and may be completed concurrently. For a large, complex project the complete set of activities will usually contain a combinaticn of series and parallel elements (4:398). Networking was designed to aid the program manager in planning, scheduling, and controlling a project. For planning purposes prior to the start of the project, the PERT/CPM technique allows a manager to network the complete

flow of activities and to calculate the expected total amount of time the entire project will take to complete (4:398). Since evaluation and adjustment of complex, highly interrelated operations is a difficult task for management, the networking technique highlights the bottleneck activities in the project so that the manager may either allocate more resources to them or keep a careful watch on them as the project progresses. To facilitate control after the project has begun, networking provides a way of monitoring progress and calling attention to those delays which will cause a delay in the project's completion date.

Implementation. For purposes of implementation, organizational plans are subdivided into specific projects, jobs and tasks which must be performed. A specific job or task can be further subdivided into well-defined work activities that have identifiable start and completion points. Depending upon the type and nature of the project, work activities can be either one-time or repetitive. For example the acquisition of a major weapon system by the Air Force's ASD consists of many one-time activities. However, the actual production of the system involves repetitive activities. In a special project consisting of one-time activities, the tasks needed to complete the project are accomplished by different agencies within the organization. The main task of the program manager, therefore, is to coordinate the performance of the different agencies involved in the project. This requires that activities of

the various agencies be scheduled, monitored and evaluated for purposes of control. Then the network model can be analyzed manually, translated into a mathematical model or programmed into a computer to produce various levels of output (1:382).

Summary. In today's computer modeling, the distinction between PERT and CPM as two separate techniques has largely disappeared. Computerized versions of the "PERT/CPM approach" often contain options for considering uncertainty times as well as activity time-cost tradeoffs. In this regard, modern project planning, scheduling, and control procedures have essentially combined the features of PERT and CPM such that a distinction between these two techniques is no longer necessary. This concept is the basic foundation in the creation of the CSNAS approach to networking which shall be discussed in greater detail next.

Computer Supported Network Analysis System

Introduction. The Computer Supported Network Analysis System (CSNAS) is a government-owned and operated Project Evaluation and Review Technique/Critical Path Method (PERT/CPM) package that was developed by the Air Force Acquisition Logistics Center (AFALC/LS) (7:7). CSNAS was initially developed for Integrated Logistics Support (ILS) planning on new acquisition programs but can be used by any program or project for planning, scheduling, tracking and controlling (6). It includes a series of model USAF

acquisition program network analysis diagrams with representative times for a typical major acquisition program that can be tailored by the program manager to become the program tracking and briefing data base system. The entire system is based on network analysis.

Advantages. CSNAS was developed as a system "friendly" enough for the user with no prior computer experience, but with options to satisfy the experienced users (7:7). The program manager simply develops a flow chart of work to be performed and time estimates for the durations of each job. When input into the computer, the model will compute dates, slack time, and critical path. It can then draw the flow charts and milestone charts on either common remote printers or on multicolor plotters. Three major areas for CSNAS reports generation are then available to the manager, providing a capability to access the established data base, creating appropriate charts and visual displays. These three areas are (1) tasks -- which will display the basic jobs to be completed; (2) connections -- which will provide a classic network of the relationships; and (3) resources -- which is a sub-tier management checklist of necessary resources needed which can be indirectly tied to a particular event of the master network. The manager can then input "what if" changes and let the computer recompute schedules and draw new flow diagrams on milestone charts. In addition, CSNAS indirectly uses a data base management system to assist appropriate managers track the resources

required for the tasks on their respective schedules (7:1).

Development. Information presented during a February 1986 CSNAS training session, conducted by AFALC personnel, stated that network planning was recommended in 1977 by Mr. Oscar A. Goldfarb, Deputy Assistant Secretary of the Air Force for Supply and Maintenance. In January 1978, a policy letter requiring network analysis was disseminated to the Air Force Acquisition Logistics community. In September 1979, Mr. L.K. Mosemann II, Deputy Assistant Secretary of the Air Force for Logistics recommended using networking to solve F-100 engine planning problems. During this time period, the Air Force was searching for a suitable commercial system to implement networking on. It was in fact spending $2 million a year to produce milestone charts on seven programs. CSNAS development was started in 1979 on Air Force Logistics Command's (AFLC) CREATE computer and the user base has expanded dramatically since that time.

In early 1980, AFLC approved purchase plans for a large-scale mainframe computer which could be used to comply with the policy direction received during the preceding three years. A Hewlett-Packard 3000 mini-computer was installed in the summer of 1981 and one organization was moved off the CREATE computer to test the operation of the software on the HP 3000 computer. By the start of 1982, the software had completed its testing and the user base had grown to eight versus a planned four organizations. In

1983, a major new capability was added to store networking and scheduling data in a new data base management system. About the same time, new software was released which allowed the user the capability of tracking resources along with the schedule, such that any change to the schedule would automatically change the resource need dates. By the summer of 1983, the user base on the AFALC HP 3000 computer had grown to 40 organizations and the HP 3000 software, with plotters, terminals, and printers, was available at all Air Force System Command (AFSC) product divisions. In mid-1984, an effort to convert the CSNAS software onto the Aeronautical System Division's (ASD) VAX computer's Automated Management System (AMS) began. By November, the initial testing of the new software was initiated and by February 1985, the testing was successfully completed and CSNAS was ready for operation on any VAX. By June 1985 CSNAS version 3.0 on the VAX had been deployed to all AFSC product divisions, the Army's Medical Research Labs and several DOD contractors. Also, CSNAS was converted to compatibility with stand-alone personal computers such as the Zenith 100, Zenith 150 (TEMPEST-qualified), and the IBM-PC and the PC version has been deployed across the U.S. to individual bases and to DOD contractors.

In April 1986, AFSC, ASD, AFALC, and several other agencies met at Eglin AFB, Florida to consolidate positions for making CSNAS the standard AFSC system, how to integrate it with other program management data bases, and how to fund

future enhancements. As a result, TRW was hired to do a study on CSNAS enhancements and their costs. An August 1986 meeting was scheduled to be held to review the TRW effort.

With these new expanded capabilities and versatilities, CSNAS is now capable of accepting network analysis inputs at remote terminals and producing tabular reports, milestone charts, and network diagrams which can be used by the program managers to track their projects. The software is also capable of down-loading plotter data files of milestone charts to the Z-100/150 and plotting them on desktop plotters (7:7). This enables lower echelon managers to have, for the first time in their own offices, the same capability to track their appropriate realms previously enjoyed only by the upper managers.

CSNAS is currently in use at AFALC and at all AFSC product divisions for the management of ILS on acquisition programs. An analytical tool, it is also being used by the Air Logistic Centers for study of the weapon system modification process and by the USAF Support Equipment Review Group for evaluation of the support equipment process. Finally, the B-52 Offensive Avionics System (OAS) conversion and B-1B Site Activation Task Forces (SATAF) are both using CSNAS networking to help them plan and control their operations. As a result, the AFSC Inspector General (IG) recently rendered a laudatory rating on the B-1B SATAF's use of CSNAS (6).

Weapon System Acquisition

General. When a component of the Department of Defense (DOD) initiates a weapon system acquisition program, it is based upon a validated need to fill a gap in the national defense. The acquisition process is a lengthy and complicated one, designed to fully assess the program's merits at each milestone, insuring that entry into the next phase, with its increased commitment of national resources, is fully warranted and potentially fruitful.

Introduction. Before a full examination and understanding of the integrated weapon system acquisition (WSA) process for the Precision Location Strike System (PLSS) can be obtained, it is first necessary to establish a common baseline of information for comparison and analysis. The following paragraphs offer a brief overview of the WSA process. Because of the complexity of each acquisition process, only the most important elements of each phase are presented. The researcher's intent is to capture only those elements of each acquisition process that are common to all applications of the WSA process and to highlight those areas where management networking is or could be applied.

This broad overview is intended to provide the baseline of information for the more detailed analysis that will be the focus of this research effort, and it is intended to give the reader a better understanding of the complete acquisition process. Additionally, it will help put the more detailed CSNAS networks, as they apply to PLSS, into

better perspective and hopefully, make them easier to understand and interpret. The overview presented is intended to be generic and descriptive, so as to enhance understanding as much as possible and yet not be specific regarding any particular acquisition strategy or methodology.

Acquisition Process. The weapon system acquisition (WSA) process for major weapon systems consists of four distinct phases with four major decision points, formally called DSARCs. (During the final draft of this report, the offical direction to replace the Defense System Acquisition Review Council (DSARC) with the Joint Requirements Management Board (JRMB) was received and any appropriate change has been included).

The four phases are (1) the Concept Exploration Phase, (2) the Demonstration/Validation Phase, (3) the Full-Scale Development Phase, and (4) the Production/Deployment Phase (19:3). These phases are tailored to fit each program to minimize acquisition costs and times, consistent with the technical risks involved (19:7). The four major decision points are called (1) Milestone 0 or the Mission Need Determination, (2) Milestone I or Requirements Validation, (3) Milestone II or Program Go-Ahead, and Milestone III or Production/Deployment (19:3a). For major programs, Milestones I, II, and III require approval from the Secretary of Defense (SECDEF) before the WSA for that particular system can proceed (19:15).

Even before the concept exploration phase begins, an operational need must exist to justify the development of a new weapon system. If an existing capability cannot satisfy these needs, then a Statement of Operational Need (SON) is developed by the appropriate major command (MAJCOM) and it can lead to a new weapon system. Validation of this new SON by the appropriate authorities and agencies constitutes the Milestone 0 or Mission Need Determination Decision. This decision marks the commencement of the concept exploration phase. For major systems (i.e., RDT&E exceeds $200M or procurement exceeds $1B), an additional document called the Justification of Major System New Start (JMSNS) is prepared and is included in the Service's annual Program Objective Memorandum (POM). This process is used to communicate the need to the SECDEF and inclusion in the DOD budget authorizes the Service to proceed with the concept exploration phase. Formal direction to the MAJCOMs comes from Headquarters-Air Force through a Program Management Directive (PMD). The PMD is used throughout the WSA to provide program management direction.

Concept Exploration Phase. The first phase of the WSA process is the concept exploration phase. At this point there is only a commitment to identify and explore alternate solutions. During this phase, the program manager is designated and an operational charter is created which delineates the manager's responsibility, authority, and accountability. The newly-formed system program office

(SPO) develops a functional baseline for the weapon system during this phase which includes broad system performance objectives, an operational concept, a logistics concept, and cost estimates. Another major product of this phase is the Program Management Plan (PMP). The PMP specifies the basic management approach to be used in any further phases of the WSA. The PMP also specifies the various technical, business, and management aspects of the SPO/contractor relationships, the master program schedules, the types of management reports that must be generated and other managerial control information. It is in this arena that networking becomes a valuable tool of management, helping the program management office to plan, schedule, control, track, and report program status (17:2).

Of primary importance is the examination of alternate means of satisfying the SON. Various resources which include but are not limited to industrial contractors, government laboratories, and educational institutions are involved in the identification of these alternatives. To ensure these alternates can meet the using command's needs and preferences, the MAJCOM is actively involved. Throughout this process, various theoretical cost estimates are developed, feasibility and risk analyses are conducted, and tradeoff studies are used to support cost assertions and alternate proposals (19:5).

Findings and recommendations generated during this phase are consolidated into a System Concept Paper (SCP)

that is presented to the JRMB during the Milestone I review and subsequent JRMB deliberations concerning program continuation. The DSARC recommendations are presented to the SECDEF for his approval and the SECDEF issues a Secretary of Defense Decision Memorandum (SDDM) thus reaffirming the mission need and approving one or more of the alternatives for further demonstration and validation (17:13-14).

Demonstration/Validation Phase. The SECDEF approval at Milestone I is communicated to the SPO through a revised PMD, which initiates the demonstration/validation phase of the WSA process. This phase constitutes a formalized attempt to decide if full-scale development of the system should be approved. Additionally, it is an attempt to establish firm and realistic performance specifications which fully meet the operational and support requirements of the system. The main thrust of the effort is to reduce the technical risk and economic uncertainty through a more detailed definition of the new system (17:13-14).

The demonstration/validation phase is typically accomplished by defense contractors under SPO direction in one of three ways: (1) primary system hardware prototyping, (2) design definition paper studies, or (3) paper definition plus subsystem prototyping. The main intent of the effort is to reduce the technical or economic risks (17:13-14).

A design definition paper study is an approach by a defense contractor, working under SPO direction, to define the proposed system through the use of system studies validation and detailed engineering analysis. The products of this analysis are detailed system specifications, performance specifications, initial hardware configuration specifications, refined cost estimates, and schedule projections. This detailed package is then used by a government source selection board to evaluate the contractors' proposals and select the best proposed system for further development (17:15-17).

In the primary hardware systems prototyping strategy, actual system hardware is fabricated and evaluated in a competitive evaluation. This approach is concerned with the fabrication of a system resembling the operational system only to the extent that performance objectives can be validated. The data gathered from the competition constitute part of what is presented to a source selection board for evaluation and selection of the best system for further development. This competition process offers an opportunity for the development of contractor full-scale development program management plans. These plans are structured so they can be implemented contractually for full-scale development and must satisfactorily answer questions concerning system producibility, management ability, and other system specific information (17:15-17).

The chief payoffs in the dual contractor approach are to maintain competition longer and to insure a better data base for the next step. Therefore, near the conclusion of the demonstration/validation phase, the source selection authority will select the system that is recommended for production in the development/deployment phase of the WSA process. Also at this time, the SPO develops the Request for Proposal (RFP) for Full-Scale Development (FSD), the DCP is generated and an Integrated Program Summary (IPS) is prepared. These papers, which summarize the Service's acquisition plan for the system life-cycle and provide a management review of the program, are forwarded for SECDEF approval. SECDEF approval of the program comes via another JRMB review and another SDDM. This constitutes Milestone II or the Program Go-Ahead Decision (17:3a).

Full-Scale Development. The prime objective of FSD is the design, development, fabrication and testing of pre-production system. The system design must be finalized with comprehensive and complete design reviews, and engineering drawings must be properly prepared. Critical design reviews are held where all appropriate agencies come together to reach common agreement on formal acceptance criteria of the weapon system design (17:15).

A major effort during this phase is test and evaluation. The two major types of acquisition testing are development test and evaluation (DT&E) and operational test and evaluation (OT&E). The purpose of DT&E is to

demonstrate that engineering design and development are complete, design risks have been minimized, and that the system meets its contractual specifications. The purpose of OT&E is to estimate operational effectiveness and suitability, and to identify deficiencies and the need for modifications. OT&E is essentially an assessment of performance against operational requirements (17:16a).

The Service Secretary may be delegated the authority to make the Milestone III decision provided there are no major changes to the program as approved at Milestone II. Following sufficient planning and testing, a revised and updated DCP is prepared and submitted to the SECDEF for review. The DCP is presented to the JRMB at Milestone III for recommendation of approval and is forwarded to the SECDEF for approval. Approval at this point constitutes the Milestone III or Production and Deployment Decision (17:6a).

Production/Deployment Phase. It is during the onset of this phase that actual commitments for production are formally and contractually accomplished. Initially, during the production portion of this phase, the weapon system enters into two distinct periods; initial tooling and follow-on production. In the first period, initial tooling and production is accomplished to bring the system production to its planned peak rate. In addition to the primary mission equipment, training and training equipment, special test equipment, spares, supplies, support equipment, technical orders, manuals, and appropriate facilities must

all be planned for, scheduled, and produced or built (17:18-19).

Follow-on production, the second period, is concerned with sustained production once the peak rate is achieved. During this later period, Program Management Responsibility Transfer (PMRT) is accomplished. This is the formal act of transferring responsibility for program management from the AFSC SPO to AFLC and should occur at the earliest reasonable point in time (17:18).

Once the system enters production, the deployment phase also begins. This is when the systems are formally turned over to the using command. Deployment continues, often concurrently with the production portion of this phase, until all the assets are in the field and in operational use. During this stage all support facilities and equipment must be fully developed and made ready for use. This includes all required support at operational bases as well as activation and operation of depot support for the system (17:19).

There is no smooth passage between an operational deficiency and the correction of that deficiency through the acquisition of a new system. Additionally, the Constitutional budgetary process, the perceived military threat, the frontier of technology, and the political climate of the country can do much to affect the progress of any weapon system at any time during the acquisition process.

The preceding overview of the WSA process has been intentionally broad and generic in order to provide a brief foundation of the general weapon system acquisition process that will serve as a prelude to the following introduction to the Precision Location Strike System (PLSS). This research effort's examination of CSNAS networking as it applies to PLSS and its subsequent networking of yearly schedules and their subsequent analysis will build on the foundation laid above. Let us now turn to an overview of the PLSS system.

Precision Location Strike System

Introduction. Radar-controlled surface-to-air missle threats worldwide have established the need for a system to locate ground-based electromagnetic emitters and destroy emitting/nonemitting targets. The Precision Location Strike System (PLSS) is designed to provide a highly accurate and responsive integrated location/attack capability for defense suppression. It is envisioned to be an adverse weather, all light, near-real-time system which uses time difference of arrival/direction of arrival (TOA/DOA) for location functions and distance measuring equipment (DME) technology for navigation/attack functions. The system will use guided/unguided munitions, will function in near-real-time and is required to interface with the tactical air control system and the North Atlantic Treaty Organization's command, control, communications and intelligence systems (28:1).

In Europe, PLSS will counter the formidable Soviet air defense threat. Control of airspace is a prerequisite for gaining and holding territory and the Soviet Union has developed an interlocking "air defense umbrella" capable of moving with its armies. The threat consists primarily of Anti-Air Artillery systems (ZSU 23-4) and Surface-to-Air Missile (SA) systems -- both fixed (SA-3,5 and 10) and mobile (SA-2,4,6,7,8 and 9). These systems are controlled by radar networks.

The entire Soviet air defense threat is significant and growing, both in numbers and in technical sophistication. Existing threat systems number in the thousands and use various measures to escape detection and/or jamming. These include short radiation on-times (often measured in seconds), changes in operating characteristics such as pulse repetition interval, and mobility. Developing and follow-on systems are expected to exhibit even more sophisticated methods of emission control parameter agility, and other countermeasures.

Background. The PLSS concept was formulated and validated in a series of programs and tests in the late 1960s and early 1970s. Its design, which utilizes technology developed during these previous programs, was initiated by an Air Force Requirements Action Directive from then-Deputy Secretary of Defense Packard in July 1971. The Directive called for the Air Force to develop a plan for a location and strike system based on TOA and DME techniques.

The Advanced Location and Strike System (ALSS) which incorporated these techniques was developed in 1972. It was originally intended for deployment in Southeast Asia, but was never deployed there since U.S. participation in that conflict ended in 1973. ALSS had limited capabilities, but did effectively prove the location/strike concept. It was deployed in Europe in 1975 for a limited demonstration. Since then, it has served as a testbed for improvements in the state of the art, for PLSS risk reduction efforts which preceded full-scale development, and for reaffirmation of the PLSS requirements as they were formalized in Tactical Air Command (TAC) Required Operational Capability (ROC) 314-74. This ROC called for a day/night, all-weather location and strike system which must be capable of worldwide employment.

System Description. PLSS was originally conceived to be an integrated location/strike system: it would detect, accurately locate, identify, and direct strikes against enemy emitters in near-real-time. PLSS would be a key element in the Air Force's Defense Suppression Mission. PLSS would perform continuously over a large area of coverage (an entire theater), in day or night, in all-weather, and in a dense, hostile, and complex electromagnetic environment.

As applied to PLSS, the "location" function means passively detecting enemy emitters and using information from the intercepted signals to compute emitter positions

via TOA or DOA techniques. These emitters are identified by comparing the received signals with a stored database of known emitters. This provides the ability to distinguish high-priority targets.

Once PLSS "knows" the location of a target (i.e., has computed its location or has been supplied with target location by some other means) it would direct strike aircraft and weapons against it using a DME technique. PLSS would provide targeting and guidance information to the strike/attack aircraft pilot (via his fire-control computer and displays), allowing him to execute his attack profile with precision. PLSS also would provide precision guidance for standoff weapons.

According to the IOT&E Test Plan issued by the Air Force Operational Test and Evaluation Center (AFOTEC) in January 1985; PLSS is a tactical target engagement system that uses airborne sensors, data links, distance measuring equipment, ground-based processing, and the Tactical Air Forces to suppress enemy air defenses. PLSS is comprised of five physically separated subsystems that communicate with each other through secure, jam-resistant, interoperable data links (IDL). The system under original development consisted of a central processing subsystem (CPS), a site navigation subsystem (SNS), an aircraft mission subsystem (AMS) installed on a TR-1 aircraft, a vehicle navigation subsystem (VNS)-equipped F-16 attack aircraft, and an extended range, powered weapon equipped with a weapon

navigation subsystem (WNS). PLSS's three key functions are emitter location, navigation/attack, and communications (28:3).

PLSS Subsystems. PLSS is composed of five elements encompassing ground, avionics, and weapons systems/ subsystems (28:13). The relationship between the various PLSS subsystems, their functions, and the system operational concept is presented in the following paragraphs.

Central Processing Subsystem. The CPS is the "brains" of the PLSS system and is a ground-based complex of computers, displays, data-link and communication equipment which is the master control center for PLSS and serves as the focal point for command and control of all PLSS subsystems. It is situated in a fully militarized shelter which is housed in a hardened facility located far behind the Forward Edge of the Battle Area (FEBA) (28:6).

The CPS generates control information for PLSS-assigned TR-1s, also known as the airborne relay vehicle (ARV). Control information consists of threat receiver frequency selections and ground beacon interrogation. The CPS processes emitter intercept data in near real-time to identify and locate emitters, and then directs attacks on selected targets. It will also acquire attack aircraft/ weapons at predesignated pickup points and generate position information necessary to place VNS-equipped attack aircraft carrying unguided weapons within the release envelope or attack aircraft equipped with standoff weapons within the

weapon launch envelope. The CPS will also provide position information to the standoff weapon for post-launch navigation to the target. The CPS is fully transportable with a 72-hour take-down/set-up time and a training/ contingency deployment version of the CPS located at Nellis AFB, Nevada (28:6).

Aircraft Mission Subsystem. The AMS is the "eyes and ears" of the PLSS system and is a set of PLSS-peculiar avionics carried onboard three TR-1 aircraft which are employed in a "triad configuration." The ARV serves dual functions as the passive intercept platform for radio-frequency signals from threat emitters and as the relay platform for two-way data link communications (command and control) between the CPS and other PLSS subsystems (28:8).

The DME, located in the TR-1, relays data from the CPS, and also provides ranging data from the TR-1 to the ground beacons (SNSs), other TR-1s (AMS), PLSS-equipped attack aircraft (VNS), and/or standoff weapons (28:8).

Site Navigation Subsystem. Knowledge of the AMS position is necessary to compute the position of the target threat emitter, strike aircraft, and PLSS-guided weapons. The SNS is a DME-ranging ground beacon that provides a fixed ground reference for translation of TOA/DME coordinates into a highly accurate earth coordinate system for all PLSS location and attack operations. Multiple SNSs are used to precisely locate ARV, VNS, and WNS. The AMS interrogates these beacons and sends the response to the CPS. Since the

CPS "knows" the position of the SNS beacons, it continuously determines the position of the AMS (28:9).

Vehicle Navigation Subsystem. The F-16 has been designated by the TAF as the operational aircraft for the VNS. Earlier plans envisioned the F-4 carrying the VNS but it could be installed on a wide variety of strike/attack aircraft. The VNS consists of a PLSS DME interface unit which allows transmittal of aircraft avionics data (inertial navigation information, weapon computer flight instruments, etc.), through the AMS relay, to the CPS and receives updated aircraft position information along with target latitude, longitude, and elevation information. The VNS interfaces with the F-16 fire control components and heads-up display. Its function is to accurately position the attack aircraft to the desired ordinance release point. Weapon release points are determined by attack aircraft avionics using PLSS-derived aircraft position and target coordinates (28:10).

FY83 Congressional action removed the F-16/PLSS interface from the PLSS program element and the DME interface, while still being managed by the PLSS SPO, would be developed and funded within the F-16 program (28:10).

Weapon Navigation Subsystem. The WNS was to be a DME unit functionally similar to the VNS and SNS but consisting of PLSS equipment installed in a precision guided air-launched or ground-launched, powered standoff weapon. They would contain antennas, receivers, transmitters, and an

interface unit which allowed the weapon to receive PLSS-generated position and target information via the AMS relay (28:10).

The WNS is not presently part of the PLSS FSD contract since provisions for a standoff, powered weapon have been deferred by Congressional action (28:2).

Operations. PLSS will play an important role in performing tactical air operations by providing required information on target location and identification, precise navigation, and guidance for DME-equipped aircraft/weapons against selected targets. The system will provide a major element to the theater commander's ability to effectively respond to enemy actions (28:12).

The PLSS system must be able to detect, identify, and accurately locate emitters (in near-real-time) in a dense electromagnetic environment. It must be able to provide for accurate delivery of unguided weapons by fighter aircraft or guided standoff weapons against these targets during day/night operations and in all-weather conditions. The system must also be able to direct attacks against targets whose coordinates are located or determined by other sources (28:12).

In PLSS, the two techniques of DME and TOA are used to perform three functions: navigation, location/positioning, and strike/attack. The navigation function is actually a prerequisite for conducting the location and strike function. That is, not only do the DME links determine the

positions of the PLSS subsystems, but they also carry guidance inputs and weapon's commands computed by the CPS and used directly in the strike function.

For maximum operational flexibility, the DME portion of the AMS is carried aboard the TR-1s, aircraft with sufficiently high altitude and a large field of view. This allows DME navigation and strike capabilities deep within enemy territory while keeping the CPS safely behind the FEBA.

Navigation Function. The navigation function consists of determining the position of the PLSS component subsystems on a continuous basis.

AMS Positioning. Precise knowledge of the absolute AMS position is crucial to the location and strike functions, therefore; the positions of the target threat emitters, strike aircraft, and PLSS-guided weapons are all measured relative to the AMS and three SNS beacons.

VNS/WNS Positioning. Precise knowledge of the VNS/WNS position is crucial to the strike function, since it provides the basis for guidance inputs and weapon commands. Measurements from two AMSs having known positions, combined with independent reporting of F-16 or weapon altitude, allows very accurate determination of the VNS/WNS position on a continuous basis.

SNS Positioning. Precise knowledge of the SNS beacon positions underlies all PLSS operations, since these beacons are the fixed reference points by which the

AMS, VNS, and WNS positions are measured. Initially, some SNSs are located on surveyed sites and new beacons may be added or moved without a preliminary site survey.

Strike/Attack Function. The method PLSS uses to control strikes depends on the desired attack profile. PLSS allows direct attacks or standoff attacks against located targets.

Direct Attack. Consider a strike/attack aircraft delivering unguided ordinance to a target whose coordinates are precisely known. The pilot must have up-to-date knowledge of his position with respect to a designated penetration corridor, while retaining the ability to take evasive actions necessary for survival. Determining the release point also requires knowledge of the strike aircraft's position, altitude, speed and heading, as well as stored information about weapon ballistics and continuous updates of target position.

In PLSS, the DME link is used to send control inputs to the VNS aboard the F-16. These inputs are computed by the CPS, which stores and processes aircraft, target, and weapon data in near-real-time for many strike aircraft simultaneously. PLSS guidance thus allows the pilot to fly the desired profile accurately to the target area. The CPS also notifies the pilot when he is within range of his target, so he can maneuver for weapon release. The CPS can trigger weapon launch automatically, although the pilot retains override option.

Standoff Attack. PLSS also uses the DME link to direct strikes made with standoff weapons. The CPS sends weapon launch instructions via the AMS relay. Once the strike aircraft has launched the standoff missile, it is freed for other tasks; PLSS continues to guide the missile. The CPS compares the weapon trajectory with the current estimate of target location, computes midcourse or terminal corrections, and transmits these data to the WNS, again by way of the AMS relay.

System Development. Information available from Appendix B of the 1981 PLSS Chronology reveals the following details of the PLSS history. In 1966, the Air Force initiated a quick reaction capability project at ASD to provide the feasibility of developing a system that could be installed in aircraft using TOA techniques to locate pulsed radars in near-real-time. In 1968, an experimental system was demonstrated that successfully located emitters (27:227).

In 1970, ASD carried out a defense-suppression study and as a result of this study, Deputy Secretary of Defense David Packard, in January 1971, approved several programs in the defense-suppression area. Among these programs was Compass Counter, which included the first mention of the Precision Emitter Location Strike System (PELSS) which was to be the forerunner of PLSS (27:227).

In July 1971, the Defense Science Board's summer study of defense suppression recommended developing a location and

strike capability for penetrating aircraft, thus the Air Force's Requirements Action Directive came into being. In October, Mr. Packard directed the Army and Navy to work with the Air Force in order to assure that TOA/DME progress would have maximum usefulness for all the services. In December 1972, the Air Force directed ASD to begin development of Compass Counter -- later PELSS.

In February 1972, development of the Advanced Location Strike System (ALSS) was directed. It would also use TOA/DME techniques and in March, Area Coordination Paper #4 was published. By May, Lockheed Missile and Space Company of Sunnyvale, California and IBM of Oswego, New York, formally completed competitive system definition study contracts. By October, flight testing of ALSS had started at Holloman AFB, New Mexico (27:227-228).

In January 1973, ASD initiated parallel risk-reduction efforts for PELSS by sending requests for proposals to Lockheed and IBM. Both companies responded with proposals and by May, a PELSS Project Office was established in ASD. It was tasked with responsibility for all TOA/DME activities, including ALSS. By June 1973, both IBM and Lockheed had been awarded nine month risk-reduction contracts and by September, Tactical Air Command (TAC) had completed its first phase of ALSS initial operational testing and evaluation (IOT&E) (27:228).

In May 1974, TAC formally specified that the Precision Location Strike System was a required operational capability

and in July, the Air Staff directed that PELSS be changed to PLSS. PELSS and ALSS would be included in PLSS. By November, PLSS had successfully accomplished a joint operational technical review and the DSARC I review but by late 1974, funding for fiscal years 1975-1977 was reduced (27:229).

In January 1975, the Air Force directed competitive procurement for PLSS and ASD devised a two-phase contracting approach for full-scale development. Phase I consisted of design definition; cost, performance, and schedule tradeoffs; and commonality and interoperability studies and analyses. Phase I would help refine the RFP for Phase II which would be Full-Scale Development. By June, funding was coming under Congressional review, with indications that funds would be cut; therefore DOD postponed release of the RFP (27:230).

By the summer of 1975, the ALSS deployment in Europe had ended and in August, the RFP for Phase I was released. In December, the Air Force Scientific Board strongly supported urgent development of TOA/DME technologies using defense-suppression.

In March 1976, the PLSS Phase I contracts were awarded to Boeing and Lockheed. During this time, in an effort to increase SPO manning, AFSC concurrently directed a management review of the PLSS program. The review concluded that the SPO had been inadequately manned, that many necessary management actions were not being accomplished

resulting in management by crisis in an informal, unstructured manner. SPO personnel worked considerable overtime, including nights and weekends, to manage their demanding responsibilities as the workload expanded. Approval was granted to increase the manning from about 54 to 68 in an effort to properly manage the increased workload that Full-Scale Development (FSD) would entail (27:230).

In July 1976, the Phase II RFP, which would be Full-Scale Development, was released and by September, proposals were received from both Phase I contractors (27:230-231).

In June 1977, Lockheed was selected as the Phase II contractor and a contract was awarded, initially limiting Lockheed to specific pre-DSARC support tasks. In July, the DSARC II review was conducted but approval was withheld until additional information was provided. In September, DOD directed Air Force to proceed with FSD (27:231).

The System Requirements Review was held in January 1978 and the System Design Review was completed in May 1978. By December, funds requested by ASD were reduced by DOD in the President's Proposed Budget. These funds were diverted to higher priority defense programs (27:232).

In March 1979, a cap was put on FY79 expenditures to shift some of the funds into FY80. In October, Congress reduced FY80 funds for PLSS by $56.6M to $15M and this amount, plus the $31.8M not spent in FY79, became the $46.8M operating budget for FY80. By December, projected funding

for FY81 was reduced to $14.85M and by the time Congress reduced the FY80 PLSS program another $9.9M, it was clear the program would need to be restructured and redefined. Program officials concluded that the Senate Armed Services Committee failed to support PLSS for two main reasons: General Accounting Office criticisms of the program's reduction in scope, and a lack of progress in developing a standoff weapon (27:232).

Restructure alternatives were presented to the AFSARC and OSD and the results called for a severe slowdown in the PLSS development effort. Contractor manning was reduced from 850 to 180 with only critical efforts to be worked. In August 1979, the TR-1 was selected as the Airborne Relay Vehicle (ARV) and the Preliminary Design Review was held in October. Shortly afterward, in January 1980, the restructured program was submitted to Congress by memorandum (27:233).

The FY81 Amended President's Budget reduced PLSS funding from $61.9M to $30.2M and in October 1980, the program's level of efforts were reduced to a minimum under the continuing resolution authority. Thus the FY81 PLSS appropriation was $15M which became the basis for the December 1980 SAR. Negotiations on the original restructured PLSS contract agreed to in December 1980 assumed full funding in FY81. These negotiations formed a basis for any further adjustments necessary to comply with

approved FY81 funding following congressional resolution of the Air Force's supplemental funding.

The PLSS program did not receive full FY81 funding until the Reagan Administration took office and submitted a supplemental budget in June 1981. The Air Force placed $48.0M in the FY81 Supplemental Budget request to restore the program funding to $62.7M. Program officials moved immediately to order material that had been deferred, planned changes to improve survivabilty and effectiveness, and to rebuild the contractor's work force. But the FY82 budget contained only limited procurement funding. These funding delays caused the contract schedule to be extended by 38 months and the cost to be renegotiated. This was completed in February 1982 (27:234).

The F-16 was selected as the primary attack aircraft in September 1981 and the Vehicle Navigation Subsystem (VNS) development change order was issued in September 1982. The FY83 Congressional Appropriations Committees again reduced PLSS funding and issued direction to separate the strike developments from the emitter location developments and to transfer strike program direction from the PLSS program to the Tactical Cryptological Program (TCP). The PLSS F-16 VNS stop work was issued in February 1983. The long delayed Critical Design Review occurred in March 1983 and by July, past major program changes and funding cuts had combined to further lengthen the PLSS FSD program from 78 to 92 months (27:234).

In FY84, the procurement of items for testing was completed. Qualification and acceptance testing of FSD hardware units continued and contractor system integration testing and single aircraft flight tests were initiated. The first TR-1 flight of the Airborne Mission Subsystem (AMS) was in December 1983 and was declared highly successful. Nine additional single aircraft test missions were successfully flown. The government test team was formed in January 1984 to monitor contractor integration testing, scheduled to begin in late 1984, prior to the AFSARC IIIA milestone, and to conduct the Combined Development Test and Evaluation/Initial Operational Test and Evaluation (DT&E/IOT&E) which was scheduled to begin in mid-1985. Advanced procurement and long-lead buy of Government Furnished Equipment (GFE) for production was procured for the TR-1 line in late FY84. Due to late subcontractor deliveries and software schedule slips, the contractor integration testing and flight tests also slipped and as a result the planned AFSARC IIIA milestone slipped into FY85. Also, during this time, the F-16 VNS (strike portion) studies continued after development was reinitiated in the F-16 program, renamed the adaptive targeting data link (ATDL) and was expanded to include other planned systems. Funding would be included under the F-16 program elements but program direction would be handled by the PLSS SPO (34:4). Additionally, all development work on the WNS was, by now, completely halted and would never resume.

Current Program Status. Present budget constraints and the delay of the F-16/PLSS interface are impacting the schedule and conduct of testing. Combined contractor integrated testing began in January 1985 and is expected to be completed in April 1987. The testing was originally envisioned to be a phased test approach which would have included an integrated evaluation of the PLSS surveillance capability (CPS, AMS, and SNS), followed by evaluation of an F-16 attack capability (VNS), and then evaluation of an extended-range, powered weapon attack capability (WNS), but deletion of the strike programs changed the scope of the testing objectives. The first successful Triad test was conducted on 29 July 1985 (5,10).

By the spring of 1986, DT&E/IOT&E had begun with the TR-1s operating out of Beale AFB, the CPS at Sunnyvale AFS, California, and the SNS located around the Bay Area of San Francisco. Missions were being flown against "simulated enemy emitters located at China Lake, California. During the summer of 1986, establishment of a combined baseline was planned and in the fall, the tests are planned to move to Nellis AFB, Nevada for missions using organic Nellis emitters (5).

The AFSARC IIIA was most recently scheduled for April 1986 but the preliminary program review through the Air Force Council, which precedes the formal AFSARC, caused the AFSARC to be delayed until testing is completed. This AFSARC would have given the limited Production Go-Ahead, but

as a result of the cancelled meeting, all increased production money for the first lot buy was unfunded ($150M). Once testing is completed in April 1987, a decision will be made on whether the system will be considered a prototype demonstration and subsequently mothballed or perhaps a limited demonstration or operational capability will be established in Europe. This program review is currently scheduled for April 1987 (5,10).

Air Force's Position. Air Force Chief of Staff General Charles Gabriel says the Air Force isn't rushing into production of Lockheed's PLSS:

> "because money is tight, there are other ways to find hostile air defense emitters, development has taken too long, and there is no weapon to use against PLSS targets."

Gabriel told the House Appropriations Defense Subcommittee in Executive Session on 27 February 1986, the transcript of which was recently released and published in the 29 May 1986 issue of Aerospace Weekly, that "the funding environment was a big reason for not wanting to proceed."

And, he said, "We have other ways to do these jobs." The Grumman-Norden Joint Surveillance Target Attack Radar System (Joint STARS):

> "will give us what we hope will be an AWACS perspective of the ground situation...We have the detection capability that will locate the emitters, but not to the precise location that you can target like the PLSS will. We have ways to send in vehicles to do that kind of job. I am talking about on-board sensors, as well."

Also, said Gabriel, "I have been frustrated by PLSS" because of its pace of development. Fifteen years ago, he said, the Air Force started a program to find emitters associated with surface-to-air missiles in North Vietnam and Laos. But it still doesn't have an operational system of the type envisioned then. "PLSS development has been painfully slow," Gabriel said.

The General acknowledged that he has "seen that PLSS could work in terms of guiding F-16s to the target." In discussing tests of the system, in which three Lockheed TR-1s fly cooperative orbits to locate emitters, he said:

> "PLSS should do that very well, put the F-16s in for a direct attack. But we haven't been able to develop a guided weapon that could be thrown in. We have, in my mind, not enough experience with three aircraft working at one time to give you precise locations so that you can target and strike. I am patient, but frustrated. I think it has come slower than it should for half a billion dollars..."

General Gabriel went on to say that he (11:259):

> "would rather walk away from the program than pour a lot of money down the hole if they can't tell me we have a cost effective system to do the job for us. We have to take a lot of things like this, programs we wouldn't want to cut, but in this funding environment, you have to consider doing things you don't want to do. It is not coming along as fast as I thought it would, and they have to prove to us that it should stay alive."

In March, shortly after Gabriel's testimony, the Air Force cancelled the PLSS production program. It decided, however, "to complete testing of full-scale development assets to demonstrate operational utility of the PLSS technique for future Air Force applications," an AF

spokesman said that week. When asked if PLSS could eventually go into production, the spokesman replied, "No one has ever said that isn't the case. But today, it's cancelled" (11:260).

The DOD has long been managing weapon system acquisitions, such as PLSS, with numerous networking applications. Most often these networks have been created by private contractors who charge considerable fees for their services. Fortunately, many of these networks have been credited with assisting the development of these complex systems in the minimum of time and cost. But cost growths, technology problems and political support continue to take their toll on each unique program. Additionally, program managers' commitment and utilization of these networking applications are only as effective as their understanding of the networking and the perceived benefits being derived from their allocation of human resources required to keep the networks updated. Thus, any networking system, such as CSNAS, that offers the versatility of using free, supportable software on existing office hardware, offers the opportunity to standardize DOD networking applications throughout the entire acquisition community.

This concludes the introduction to networking, the CSNAS system, the weapon system acquisition process, and the PLSS program that is necessary to provide the reader a better understanding of the scope and objective of this thesis effort.

Scope

The purpose of this research effort is to examine the effectiveness of a new government managed networking model (CSNAS) as an effective managerial tool for an acquisition program manager. While this study is not concerned with CSNAS networking analysis as a general subject, its potential advantages and effectiveness as a harbinger to management of impending problems in the weapon system acquisition process will be assessed.

In view of severe time and travel restrictions, it was further decided to limit the choice of possible programs to those which are managed by a System Program Office (SPO) physically located at Wright-Patterson AFB, Ohio. It was also considered desirable to examine a program which had an extensive history of program turbulence, for various external and internal reasons, yet had progressed through most of the phases and milestones of a typical weapon system acquisition process. Selection of a smooth and successful program would provide less opportunity to simulate alternative management decisions in an effort to validate the network model's capabilities.

The SPO which best met these qualifications was the Precision Location Strike System SPO, and it was therefore selected. To further limit the size and complexity of the resultant study, the researcher decided to limit the networks to reflect only the "Big 21" events or activities which are considered the "classic master acquisition model

network" in the CSNAS system. These higher level events/ activities are: (1) Program Authorized, (2) New Start Approved, (3) Program Strategy Established, (4) Request For Proposal Released, (5) Develop Contractor's Proposals, (6) Source Selection, (7) Contract Awarded, (8) Full-Scale Development, (9) Contractor's Preliminary Design Review, (10) Critical Design Review, (11) Contractor's Fabrication and Assembly, (12) Prototype Hardware Delivered, (13) Test Program, (14) Program Decision, (15) Production Start-Up, (16) 1st Hardware Delivered (17) Initial Operational Capability (IOC), (18) Maximum Production Rate Achieved, (19) Fully Operational Capability (20) Program Management Responsibility Transfer (PMRT), and (21) Deployment Complete.

Objective

The objective of this research effort is to examine the value of a specific networking application when applied to the acquisition of a specific weapon system. Therefore, the study will seek to answer the research question: "Would it have been useful for the Precision Location Strike System (PLSS) System Program Office (SPO) to have used the Computer Supported Network Analysis System (CSNAS) to help manage the projected acquisition schedule of the program?"

Research Questions

Four research questions have been formulated for this investigative effort.

1. How effective is CSNAS at isolating the critical path -- the least flexible activities necessary for program success?

2. Could CSNAS have identified and highlighted PLSS's historically documented schedule changes *a priori*?

3. How responsive is CSNAS to changing networks and schedules?

4. Could the use of CSNAS have improved the overall PLSS program management process?

II. Research Methodology

Networking and Acquisition

The Computer Supported Network Analysis System (CSNAS) has been developed by AFALC for use as a program/project management system. It uses a form of Program Evaluation Review Technique (PERT) and Critical Path Method (CPM) to aid managers in planning, scheduling, tracking and controlling their projects. To date, no empirical data exists to validate CSNAS's effectiveness as an important acquisition manager's tool.

Design of Study

The Precision Location Strike System (PLSS) is an ASD program which has been in full-scale development since 1976 but has only recently been scheduled for combined development and initial operational test and evaluation. As such, the PLSS program offers a unique opportunity to test the value of CSNAS as an effective acquisition manager's tool because it has an almost 10-year track record of acquisition activities, major milestones and documented managerial decisions. By networking PLSS's project management history, a case study will evolve which can provide a unique opportunity to evaluate the effectiveness, appropriateness and accuracy of using CSNAS computer networking to assist the acquisition manager. Specific annual snapshots (i.e., each October 1st) will be

represented by appropriate CSNAS networking to recreate or simulate important decision milestones. Thus, CSNAS projections of the program's important or critical activities will be compared with the actual activities to which management gave their attention. This will provide empirical evidence to help the researcher determine the effectiveness of using CSNAS in the weapon system acquisition process as it specifically relates to PLSS.

Universe Defined

The universe consists of all DOD-sponsored weapons systems acquisition programs.

Population Defined

The population for this research study consists of all Air Force-sponsored acquisition programs wherein the work to be accomplished is divided for management control purposes into projects, work packages and/or activities which could be planned, scheduled, controlled or tracked by a networking model.

Sample Defined

The sample for this research effort consists of the application of the Computer Supported Network Analysis System (CSNAS) to the Precision Location Strike System (PLSS) weapon system acquisition process as supervised by the Aeronautical System Division (ASD) of the Air Force Systems Command located at Wright-Patterson AFB, Ohio.

Data Identification

The data used in this research effort were selected based upon the researcher's judgment as to its usefulness and effectiveness in assessing and demonstrating the value of CSNAS networking to the PLSS acquisition process. As such, it should not be viewed as comprehensive, nor should its selection be considered random or haphazard.

In any weapon system acquisition process, activities occur continuously and at various horizontal and vertical levels of management. While the program manager must and does keep track of all important developments on a real-time basis, any networks the SPO uses must also be capable of near-real-time response to be deemed truly valuable. This requires the capability to continually, and easily, update the network. So with this in mind, the researcher decided to pursue a policy of annual snapshots based upon the PLSS program's status at the beginning of each fiscal year. As a result, only the SPO's higher level acquisition activities and events will be examined and only those pertinent decisions and actions related to these quantifiable events will be networked and examined.

Data Collection

The foremost step is to master a working knowledge of CSNAS. This was accomplished by attending the two-day class offered monthly by AFALC/LSL. Next, a thorough review of the SPO's yearly documentations permitted an alignment of

the appropriate data into annual snapshots which represented each "particular year" in the CSNAS networks. Each year was unique, could "stand alone", and reflected all appropriate major events which had preceded. Additionally, all scheduled events and any other changes to the programs were reflected in the appropriate networking paths. During this process the program manager and current PLSS staff were able to provide some pragmatic insight and confirmation of the schedules developed during the networking of the yearly projected schedules.

The major events or activities associated with the PLSS acquisition process and chosen for CSNAS networking are: (1) Program Authorized, (2) New Start Approved, (3) Program Strategy Established, (4) Request For Proposal Released, (5) Develop Contractor's Proposals, (6) Source Selection, (7) Contract Awarded, (8) Full-Scale Development, (9) Contractor's Preliminary Design Review, (10) Critical Design Review, (11) Contractor's Fabrication and Assembly, (12) Prototype Hardware Delivered, (13) Test Program, (14) Program Decision, (15) Production Start-Up, (16) First Hardware Delivered (17) Initial Operational Capability (IOC), (18) Maximum Production Rate Achieved, (19) Fully Operational Capability (20) Program Management Responsibility Transfer (PMRT), and (21) Deployment Complete. Additionally, several other major events are included in each yearly network to present a realistic

evolution and status of the PLSS program up to that point in time.

Definition of Variables

In considering the network approach, two points require emphasis. First, to achieve an understanding of the network approach in a short period of time, it must be examined piece by piece. Secondly, networking has a strong appeal in logic and one can easily become so involved with the technique that it becomes the end rather than the means to improved management (8:5).

While the concern of this research effort is to examine the management implications of networking to a specific program management environment, PLSS, this cannot be done effectively until the reader obtains a knowledge of the "mechanics" of the approach. The network approach revolves around five key aspects: the network, resources allocation, time and cost consideration, network paths, and the critical path (8:5).

Network. The network is the foundation of the PERT/CPM approach. It is essentially an advanced concept of a flow chart, or diagram of the steps necessary to accomplish a given objective or task. It is a logistic plan for work coordination to achieve a defined goal. According to Booz as reported by the Department of the Army, a network has three basic components: events, activities, and relationships (8:5).

Event. An event, or milestone, is a clearly identifiable point in time which marks the beginning or completion of a specific task in the project. The event may be either a decision point or a physical accomplishment point (8:5-6).

Activity. An activity is the work required between events, which must be accomplished before the following event can occur. Activities will not usually start until the preceding event has been completed. They also usually reflect a change in responsibility. An activity has a definite beginning and an end, and consumes both time and resources (8:6).

Relationship. In combination, events and activities in a network serve the purpose of depicting relationships between the basic tasks involved in the program. All key relationships must be depicted in the network to enable it to picture the entire project or program as a network of events, representing specific points in time when something must be started or accomplished, connected by activities representing the work to be accomplished between events, and showing the interrelationships and interdependencies between events and activities (8:6).

Resource Allocation. Since each activity involves work to be done, it follows that each activity must have the capability to track an allocation of resources. Thus,

behind each activity in the network, and tailored to the work in that activity, is a requirement for manpower, material, equipment and facilities which the network may identify and monitor in some preordained manner. This is an important point, because the resources are the governing factors behind the elapsed time and cost of doing the work in each activity (8:6). The reader is reminded, that while resources are important, neither PERT nor CPM directly take resource allocation into consideration. Rather, the networks simply give the manager an indication of the success of the endeavor and management must make subjective decisions on resource reallocation.

Time and Costs. The expenditures of time and costs, often synonymous, are a primary management consideration. They are the distinguishing elements of success or failure in an effective control system. To meet these management requirements, network time and cost estimates may be attached to each activity. An accrual of the costs of all activities will provide the total project cost (8:6-7).

Network Paths. The concept of network paths is a key fundamental in the PERT/CPM approach. Network paths lay the basis for management action to improve project or program performance. A path may be defined as a chain of sequential events and activities required to move from the starting point of the project to its completion. There are

a number of paths in a network and work may be carried out, as required, along each path -- separately or concurrently (8:7-8).

Critical Path. A path is defined as a sequence of connected activities in the project. Therefore, the longest elapsed time path through the network that ultimately governs the length of the entire project is called the critical path. If management wishes to assure completion on schedule, this longest path must be the center of focus for actions that are to be taken (8:8).

Operational Definitions

Generic Networking Terms. The following general definitions will be used throughout this research effort to apply the fundamentals of CSNAS to the PLSS acquisition program.

Program. A program is a complex, one-time effort to achieve a definite objective which is definable in terms of a single, specific end result (17:13). For the purposes of this research effort, the term "program" is further restricted to an ASD-sponsored effort designed to acquire a military weapon system called Precision Location Strike System (PLSS). The PLSS program may be subdivided into several major projects.

Project. For the purposes of this research effort, a project is a major subsystem or component of a program which is developed by relatively autonomous

organizations. In terms of the PLSS program, a project can be conveniently conceptualized as that portion of the program for which ASD has awarded an independent contract. The project has a definite beginning and obligational completion date (20:37).

Network Analysis. Network analysis is an advanced technique used in planning and controlling complex projects and programs. A model (network) of the program is developed that depicts each task to be accomplished, each constraint that must be met, and the interrelationships that exist among the tasks (15:2). This developed network (CSNAS) is then used by the manager to dedicate and then to reallocate resources among activities, as necessary, to control and analyze the project's or program's progress.

Slack Paths. Slack paths are paths in the network which are shorter in expected duration than the critical path (i.e., one day shorter in length means one day of slack or surplus). These are the paths where there may be extra time for the project and where management may be able to borrow resources for application against the critical path (8:8). It is important to remember that the amount of time that can be borrowed is usually limited, and in fact may be nothing, if the activities need different resources or the resources are constrained.

Slack Time. The amount of time the task can be delayed without affecting the project's completion date, providing no other tasks on this path use any of that slack.

CSNAS Networking Terms. A CSNAS network diagram can identify the logical sequence, critical path, slack and recovery ratio of each task and milestone associated with the goal of the network. Each network task will normally be represented in a diagram box, with each box containing the following information:

Task Identification Number. The numeric identifier of each event represented in the network.

Project Start Date. A project start date may be defined as either the future date on which work is scheduled (S) to begin or the actual (A) past date when it did commence.

Project End Date. A project end date may be defined as either the future date on which work is scheduled (S) to end or the actual (A) past date when it did end.

Forward Pass. The CSNAS computation of the earliest possible start dates and earliest possible finish dates while taking into consideration the cumulative durations of the appropriate tasks and their scheduled dates.

Early Start Date. The earliest possible date that the task may be started according to the network's forward pass computation (7:18).

Early Finish Date. The earliest possible date that the task may be finished according to the network's forward pass computations (7:18).

Reverse Pass. The CSNAS computation of the latest possible start dates and latest possible finish dates while taking into consideration the cumulative durations of the appropriate tasks and their scheduled dates.

Late Start Date. The latest possible date that a task may be started according to the network's reverse pass computation (7:18).

Late Finish Date. The latest possible date that the task may be finished according to the network's reverse pass computations (7:18).

Task Duration. The amount of time (in weeks and days) required to complete a particular task (7:18).

Task Description. A general description of the task or job which must be completed (7:18).

Slack Time. The amount of time, in weeks and days, that the task can be delayed without affecting the project completion date providing no other tasks on that path use any of that slack (7:18).

Recovery Ratio. Slack time divided by task time. The smaller the Recovery Ratio, the more critical the task (7:18).

Office of Primary Responsibility (OPR). The office or agency who is responsible for completing or controlling the particular job.

Methodology

Introduction. PERT/CPM methods, of which CSNAS is one, perform two distinct functions: (1) network the series of activities/milestones in a logical fashion such that precedence constraints are not violated, and (2) develop a schedule of these activities to identify the earliest start and finish times and latest start and finish times for each activity, given that the project must be completed in its critical path time. To accomplish this the following input data must be provided: (1) activities/events, (2) precedence relationships, and (3) durations. PERT/CPM methods use the first two inputs to develop a network. Once the network has been developed, they use input durations (or scheduled completion dates) and the network to determine: (1) earliest start and finish times, (2) critical path time, (3) critical path(s), (4) activities on the critical path(s), (5) latest start and finish times to meet the critical path time, and (6) slack times.

Two sets of input data are provided for this research effort. Based on each set of input data, CSNAS is used to network and develop schedules for the major elements of the PLSS weapon system acquisition process from 1977 to 1986. A series of ten yearly CSNAS networks and schedules of the

PLSS projected schedule are developed for each data set. Networks and schedules are developed as of the first day of each fiscal year. It begins with 1 October 1977 because this was immediately following the award of Full-Scale Development in September 1977 and ends effective 1 July 1986, the completion date of this research. As can be expected, program documents are not routinely updated at the beginning of the fiscal year; therefore, dates taken from the first available document, which followed the beginning of October, become the basis of the input data.

Data Set I. This data set consists of the "then-current" input data available to the program manager. The activities/events chosen to be depicted in the first phase of the research are the "Big 21" (plus 27 others as they are eventually scheduled and another 9 which were unanticipated but had a significant impact on the PLSS program). The precedence relationships assigned to these activities are those required for a classical weapon system acquisition (i.e., DSARC I occurs prior to DSARC II, etc.).

For data set I, the durations are assumed to be zero or an acceptable maximum duration as determined by CSNAS. (CSNAS has the capability to develop durations based on scheduled completion dates. When durations are unknown, zero time is input for that particular task and CSNAS will automatically compute how much time it has available based on predecessor and successor dates).

Data Set I Assumptions. As in any networking application, the development of a CSNAS network requires estimated durations of the tasks being networked. Early in PLSS, as in any long acquisition program, all dates are not formalized or projected and some durations are uncertain. Some events unfold in later snapshot years which are not addressed earlier in the program.

To accomplish this, research on data set I required that four basic assumptions be followed. These relate directly to the three things required for input data.

(1) Twenty-six additional activities/events, logically categorized under one of the "Big 21" headings, are connected into the summary network in a logical manner as they occur.

(2) The basic sequential flow of the "Big 21" is maintained through proper precedence relationships.

(3) Non-constraining durations are used for activities/events not specifically addressed in the documentation of earlier years but which are one of the "Big 21".

(4) Durations of events (e.g. DSARC II) are listed as less than one month due to the uncertainty of which day in the scheduled month they will occur.

Data Set II. To more fully assess CSNAS's capability to identify and flag schedule problems, an additional data set is used. This second data set is a modification of the first ten-year PLSS program and includes mandated durations for each activity/milestone. The durations are arrived at through a forward look at the program's history and they represent a realistic and reasonable time required to complete the activity/milestone. Each yearly snapshot consists of the same 57 major activities/milestones used in the first phase. Included are the "Big 21" of the WSA process and some 36 other important events which reflect the actual WSA process experienced -- either expected or unexpected. Specified durations which are reasonable and appropriate are then determined for all of these tasks and the data is input. These revised input data are then used by CSNAS in developing networks and schedules. Thus, a "template" of activities/milestones with specified durations is created for each year which provides CSNAS with the total estimated time necessary to complete the program. As the program changed through the years, the CSNAS networks were updated and expanded or contracted as appropriate to reflect the new projected schedule.

Data Set II Assumptions. As in the original networking application, the development of expanded CSNAS networks requires estimated durations of the tasks being networked.

To accomplish this expanded objective, the four previous assumptions were followed, with Rule #3 being expanded as follows: Activities/milestones not specifically scheduled in earlier years but which were considered important milestones, would be included in all the yearly networks. This made the ten yearly networks consistent. Additionally, a review of the program history in 1985 permits reasonable and consistent durations to be assigned to all the activities/milestones. This forces CSNAS to consider them when networks and schedules are created and evaluated.

Evaluation Procedure

CSNAS should, as a minimum, perform the following: (1) develop a network and schedule based on the input data elements which include the activity/event, precedence relationships and durations, (2) create a technologically correct visual depiction of the network (left to right), (3) properly compute and display the critical path(s) of the network, (4) compute and display the appropriate slacks associated with each task, (5) permit listing of input data with computed earliest and latest start and completion dates, and (6) provide a listing of network discrepancies that should be detected.

Additionally desired capabilities would include: (1) permit numbering of all elements in the network with a unique number so that each activity in the network can be

identified by its predecessor and successor, (2) accept comprehensive descriptions of the task, (3) allow for inputting an OPR for each task, (4) accept completion dates for start and stop dates of tasks, (5) permit entry of scheduled start and completion dates for each task, (6) capability to update existing network, (7) ability to modify an existing data base if the number of activities/milestones change, (8) ability to produce both printer and plotter products, and (9) availability of technical system support.

The analysis of CSNAS begins with the actual inputting of the data set into the computer. Potential data includes the task number, task description, OPR, scheduled or completion dates, duration and precedence relationships. Errors will be interjected to study error handling.

An actual run of the network created will be visually examined for proper sequence of flow. The network should run from the left to right. Input information must be displayed correctly and correspond exactly to the input data. Then a visual examination of the plotter network, printer network, and data base listing will be conducted to determine if they properly display the input data. The visual review will also center on the computed critical path and how it is highlighted. Next will come a visual review of the computed slacks and earliest and latest start and finish dates.

The next step will be a desk-top review of the network's computed times. A desk-top review will determine if the durations are properly and logically cumulative and if the slacks computed for each task are appropriate. Following this will be visual examination of the output listing which highlights the discrepancies detected by CSNAS. The highlighted data should represent each error that has been detected. The clarity of the output listing will then be evaluated on how easy it is to isolate the true discrepancy. An error will be interjected into the schedule to determine the effect. Finally, the PLSS projected schedule will be compared to the CSNAS computed schedule to insure consistency. The durations for all the activities/ milestones are extracted and the network is physically traced to cumulatively add (for forward) or subtract (for reverse) each of the durations. Mental computations are handled like CSNAS's algorithm does -- a five day work week is used with all holidays excluded). The appropriate dates are then determined in both a forward look and reverse look manner. Because of basic assumption #4, a date computed by CSNAS which falls within one month of the PLSS projected schedule date will be considered acceptable and any CSNAS highlighting is discounted.

Next, the capabilities to update, expand, and contract the existing network will be evaluated by actual input data

changes. The quality of the plotter and printer networks and how the critical path differs visually on each is assessed.

CSNAS Output Products

This research effort uses three primary output products available from CSNAS. The first is the network data base information listing. The second is the networking diagram and the third is the discrepancies listing which is generated during a CSNAS computer run.

Network Data Base. The data base listing is formatted to provide the network user with a consolidated, yet easy-to-read, listing of all the important information that is entered in the network data base. The listing for any particular snapshot year contains all events and activities, both internal and external, that have occurred or that are planned to occur. Also included are input durations which were extracted and/or estimated from the projected schedules. The information includes the date of the report, the network's name, the network's start date, task identification, time, description, WBS/OPR, and grouping. Additionally, some other items are computed by CSNAS and listed in the output. They include the percent complete, start date and complete date.

Network Diagram. The CSNAS network diagram identifies the logical sequence (left to right), critical path, and slack and recovery ratio of each task and milestone

associated with the goal of the network. Each network task and milestone is represented in a printout box which is formatted under the following criteria:

```
  EARLY START              EARLY FINISH
.......................................
.                                     .
. TASK ID#            TASK TIME WK/DY .
.                                     .
. TASK DESCRIPTION (1st 12 characters).
. TASK DESCRIPTION (2nd 12 characters).
.                                     .
. OPR/WBS (12 characters)             .
.                                     .
. SLACK TIME WK/DY   RECOVERY RATIO   .
.......................................
  LATE START               LATE FINISH
```

Figure 1. Network Format

Each network task and milestone is connected in logical order from start to finish and boxes and connections that are printed with asterisks (*) are the network critical path(s) and have 0 or negative slack.

CSNAS Run Error Listing. Each time the network and schedule is developed and evaluated by CSNAS, an error listing is provided which lists all the discrepancies noted in the network and schedule. For the PLSS networks, each yearly network was expected to have, as a minimum, the following:

TASK # 1 HAS NO PREDECESSORS

TASK # 531 HAS NO SUCCESSORS

These events are Network Start - Task # 1 and Network Stop - Task # 531 respectively. They are the two ends of the PLSS networking universe and as such cannot be connected. To do so would create a continuous loop of the network.

Next, would come the appropriate discrepancies as detected by CSNAS during the reverse pass. The output would be: "SCHEDULED COMPLETION FOR TASK #___ CHANGED FROM YYMMDD TO YYMMDD DUE TO TASK #___". This corresponds to the reverse pass run and indicates that CSNAS has determined that the event or activity listed should have been completed prior to the scheduled date. This information provides the primary information for analysis.

Summary

This chapter has presented the design of the research effort; defined the universe, population, and sample; identified the methods of data identification and data collection, and defined the variables and operational definitions for both networking, in general, and CSNAS specifically. Additionally, the methodology and the evaluation procedure using two data sets to create ten yearly networks of the PLSS program has been explained.

The next chapter will present the specific findings and discussions documented during the creation, execution, and analysis of the yearly PLSS networks and schedules.

III. Findings and Discussion

Introduction

This chapter contains an analysis of the research results obtained when the Computer Supported Network Analysis System (CSNAS) was evaluated as a managerial tool whose use might improve the overall weapon system acquisition process. Recall that the evaluation uses two data sets obtained from the PLSS projected schedules, over a ten year period, to evaluate different aspects of the investigative questions included in the methodology.

Data set I consists of PLSS projected schedule dates (see Appendix A) which are input into CSNAS to create ten yearly CSNAS networks and schedules of the PLSS program. The process of inputting the information and the resulting outputs provide the information which are analyzed in this phase. The output data for each year, in the form of data base listings, CSNAS run error listings, and selected printer networks (1977 and 1985), all using data set I, are provided at Appendix B.

Once the experiment using data set I was completed, the methodology called for the creation of a template which is superimposed on the ten yearly networks. The template is primarily data set I with specific durations added to all the major activities/milestones networked. The result is

another series of ten yearly networks which provide additional information for analysis. The output data for each year, in the form of data base listings, CSNAS run error listings, and selected printer and network plots (1985 and 1986), all using data set II, are provided at Appendix C. A general evaluation of CSNAS as a PERT/CPM tool is provided before the detailed analyses of the CSNAS products with regard to PLSS is undertaken.

These data are analyzed and synopsized below. The format used for discussion is the presentation of the yearly analysis of schedules using data set I, then using data set II. Following the presentation of these analysis is a discussion of the results, addressing each of the research questions.

Evaluation of CSNAS as a PERT/CPM Tool

The analysis of CSNAS began with the actual inputting of data set I into a desk top Zenith 100. Three versions of CSNAS, designated ZNETI, ZNET2, and ZNET3, are available for different memory sizes. This particular machine used ZNET1 which requires only one floppy disk.

Input data is entered by selecting a menu for tasks. This gives the user a single line entry where task number, duration (in weeks and days), description, OPR, and any actual or scheduled start or stop days can be input. The task sequence used in this research began with #1 and incremented by 10. CSNAS accepted all data with no

problems. A check of the error checking capability indicated that should the user begin the entry with a space rather than a numeric task number, CSNAS will not accept the input data. Instead it will return to the accept mode, awaiting further inputs.

Once all the activity/event data was entered, the connections were entered in pairs -- predecessor and successor. A data base listing was then requested to verify the correct entry and alignment of the data within the CSNAS data base. Each element was correct and aligned in a logical, usable form. The program was executed next and the visual error listing was examined on the computer screen. CSNAS displayed the number of tasks and connections. An option allows a printer copy of everything displayed on the screen. CSNAS displays any highlighted discrepancies and a network formatted for a printer output is displayed on the screen with an option to print.

CSNAS has the flexibility to allow the user to take a time slice of the network. It displays the network start and stop days and any period between is available for output; either plotter or printer. Initially, the printer output was chosen since it provides the quickest method for troubleshooting the CSNAS networks when errors were injected. CSNAS correctly identified the two tasks which make up the network start and stop. These are always open and should appear as discrepancies. Next, a looped

precedence connection was input and an attempt was made to run the program. CSNAS correctly identified the loop, visually displayed all the connections in pairs and awaited further instructions. Next a connection was severed and an attempt was made to run the program. CSNAS again detected the incomplete network and would not run the network. All data was returned to normal and the program executed. Next a complete milestone was deleted using a special caption available. CSNAS automatically reconnects the network when the option deletes an event. Following the execution of the network, the program listing was examined. CSNAS provides three columns of data related to percent complete, user start, and user complete dates. Each date is coded with an "A" for actual or "S" for scheduled date. A printed network was also examined to determine if the critical path was isolated. Each network activity/milestone was connected in logical order from start (left) to complete (right) and boxes and connections were printed with asterisks to indicate the critical path. These had 0 or negative slack and no slack was printed.

The network diagram contained information formatted as defined in the methodology. Information that was optional (i.e. OPR, task description) was printed if entered. Early start and complete times and late start and complete times were printed for every activity/milestone. The CSNAS error listing was used to isolate any network problems detected by CSNAS. This is where the user must use subjective judgment

if problems are detected in network creations. CSNAS lists the calculated date in the diagram with an "E" if its scheduled date is not possible. A quick scan of the networks turns up the activities/milestones in question. Everything appeared proper. Now a desk-top examination of the networks took place. Manual computations and comparisons prove that the dates developed by the CSNAS networks are correct.

Evaluation of the network data was followed by an examination of the network plot. The menu is used to select the plotter rather than the printer and a time slice is selected. CSNAS creates a separate output file for each page of the plot and each page can be plotted using another program separate from ZNET1. This was done and the network plots were examined along the same criteria as specified for the printer. One major difference was detected. The network plot uses different colors to specify: (1) past events (2) scheduled events and (3) the critical path. Although this makes it extremely easy to read, its use is limited because only the original is colored; any photocopies are in black and white. CSNAS also has the capability to mark the activity/milestone corners with separate designs to help identify flows when plots are to be reproduced.

The capability to update CSNAS was examined next. Updating requires a menu selection of the appropriate

element that requires updating. Verification of updating followed the visual and desk-top manner addressed above. The ability to expand and contract the networks was also explored. Expansion required, as in original data entry, that all the elements of the task be entered on one line. Once proper connections were made, the CSNAS networks were examined visually and confirmed through desk-top computations. Contraction of the network was simpler. It required only deletion of the activity/milestone and all connections were severed and reconnected appropriately. Visual and desk-top confirmation took place. The expansion process was generally followed to create the year's network from 1977-1985. Each new projected schedule was input into CSNAS and it correctly created network and schedules based on input data set I. The network for 1986 required some contractions and modifications but the result was consistent with the earlier years.

For data set II, the process was generally one of taking the appropriate year from data set I and entering the template durations for the appropriate activities/ milestones. These yearly networks were then visually checked for format consistency and a desktop evaluation was performed. Each was consistently correct. Having satisfactorily proven that it could perform basic PERT/CPM procedures, an evaluation of CSNAS using the PLSS acquisition process as a model, was conducted. This portion

of the evaluation confirmed that CSNAS is a useful, convenient-to-use, networking tool.

Analysis of CSNAS Using PLSS Data

The ten data set I networks, created by CSNAS using scheduled dates, were all evaluated by CSNAS and only minor discrepancies were highlighted. Each highlighted discrepancy required a completion date which was within a month of the projected schedule date. Due to the methodology employed in setting durations for events, these discrepancies are noted but are not considered significant and they are discounted.

The highlighted discrepancies for 1977, 1980 and 1986 are presented below to exemplify the type of discrepancies noted. Comments on each year's activities are provided in a section for each year to document the dynamic nature of the program.

Yearly Analysis of Schedules.

1977 Analysis.

1977 CSNAS Reverse Pass. The CSNAS network was compared with the 1977 PLSS projected schedule and the reverse pass revealed the following information about the latest completion dates.

a. Task #491 - Fully Operational Capability (FOC), which was scheduled for completion on 30 September 1986, needed to be completed by 17 September 1986.

b. Task #361 - End Testing Program was scheduled to be completed in late February 1982 but would need to be completed by 8 January 1982.

1977 Comments. This is the starting network year.

1978 Comments. CSNAS incorporated the completion of the System Requirements Review in January 1978 and the System Design Review in May 1978.

1979 Comments. CSNAS incorporated the unexpected cutting of ASD's PLSS program funds in December 1978, the unexpected capping and shifting of program funds in March 1979, the selection of the TR-1 as the ARV in August 1979, and the cancellation of the DSARC IIB. Additionally, the Preliminary Design Review, which was scheduled for November 1978, was rescheduled for October 1979. Finally, the System Critical Design Review was rescheduled from September to December 1979.

1980 Analysis.

1980 CSNAS Reverse Pass. The CSNAS network was compared with the 1980 PLSS projected schedule and the reverse pass revealed the following information about the latest completion dates.

a. Task #491 - FOC, scheduled for completion by 30 September 1986, reflects a needed completion date of 9 September 1988.

b. Task #481 - IOC, now scheduled for completion by the end of September 1986, needed to be completed by 26 September 1986.

c. Task #321 - Start DT&E/IOT&E, now scheduled for completion in late March 1983, needed to be completed by 1 March 1983.

1980 Comments. CSNAS incorporated the completion of the Preliminary Design Review in October 1979 and the subsequent restructuring of the program in January 1980. The restructuring rescheduled the System Critical Design Review from December 1979 to December 1981, moved the DT&E/IOT&E start from February 1981 to March 1983, rescheduled testing completion from February 1982 to February 1984, caused a DSARC delay from January 1982 to May 1984, and an IOC delay from June 1984 to September 1986.

1981 Comments. CSNAS incorporated the withdrawal of Major System Designation in June 1981 and the replacement of the F-4 with the F-16 in September 1981. The major system DSARC, scheduled for May 1984, was cancelled and an AFSARC IIIA, Limited Production Decision, was scheduled for October 1984. To facilitate production, long-lead money was scheduled to be released in September 1983 and full system integration was scheduled for January 1983. Testing start was delayed from the spring to the fall of 1983 and test completion was scheduled for a year later.

Additionally, an AFSARC IIIB, Full Production Decision, was scheduled for March 1985.

1982 Comments. CSNAS incorporated the Program Restart that occurred in December 1981. Additionally, numerous other rescheduled events were included. The System Critical Design Review was rescheduled from December 1981 to March 1983. The prototype hardware was scheduled for completion in October 1983 with full system integration scheduled for January 1984. The test program was rescheduled to start in August 1984 instead of September 1983. The completion of testing was scheduled for August 1985. The NATO/USAFE Demonstration moved from February to June 1985. Long-lead money was rescheduled to September 1984 and the first hardware was scheduled to be delivered by April 1985.

1983 Comments. CSNAS incorporated the completion of the System Critical Design Review in March 1983 and the rephasing of the PLSS Program Length in July 1983. Some other major milestones were rescheduled to reflect the rephasing of the PLSS program due to funding cuts and hardware changes. Full System Integration was delayed from January to May 1984. The start of the DT&E/IOT&E test program slipped from August to October 1984 while the completion did not formally slip. Release of long-lead money for production and award of the limited production contract were both scheduled for October 1984.

Finally, FOT&E Phase I was scheduled to start in February 1986.

1984 Comments. CSNAS incorporated the prototype hardware being built in October 1983, the first flight for system integration in December 1983, and the start of full system integration in July 1984. Additionally, a series of other reschedules became necessary during this yearly review. The completion of the testing program was rescheduled from July 1985 to January 1986. The AFSARC was moved from October 1984 to January 1985, the limited production decision planned for February 1985, and the limited production contract award planned for March 1985. Additionally, the AFSARC IIIB and full production decision were moved from March to August 1985. First hardware delivery was delayed to February 1986 from April 1985. Finally, IOC slipped from September 1986 to February 1987 with FOC planned two years later.

1985 Comments. CSNAS incorporated the start of contractor integrated testing and the release of long-lead monies for production in October 1984. Additionally, numerous other scheduled milestones were again slipped to reflect the current status of the PLSS program. The completion of contractor integrated testing was scheduled for October 1985. The start of DT&E/IOT&E was rescheduled from October 1984 to December 1985. The NATO/USAFE Demonstration was slipped from the summer of 1985 to January 1986. The completion of DT&E/IOT&E was

scheduled for March 1986 and the start of FOT&E Phase I was rescheduled from February to June 1986. Also, the AFSARC IIIA slipped again from January 1985 to April 1986 with the limited production decision and contract award following respectively in May and June 1986. Finally, the AFSARC IIIB and the full production decision were delayed a full year to August 1986 with the first hardware scheduled to be delivered in December 1986 - the same date as scheduled the year before.

1986 Analysis.

1986 CSNAS Reverse Pass. The CSNAS network was compared with the 1986 PLSS projected schedule and the reverse pass revealed that there were no anticipated scheduling problems in the latest start and latest complete dates.

1986 Comments. CSNAS incorporated the April 1986 restructure of the program and a series of subsequent reschedules. Deployment was cancelled but testing was scheduled to proceed. Contractor integrated testing was scheduled for completion in July 1986. Establishment of a baseline and the start of DT&E/IOT&E was also planned for July 1986. In August, the testing would move to Nellis and combined DT&E/IOT&E would start in October 1986 and be completed in March 1987. The program decision is now scheduled for April 1987. At that time, the program will either be mothballed or a limited European operational

capability will be established and demonstrated by the end of June 1987.

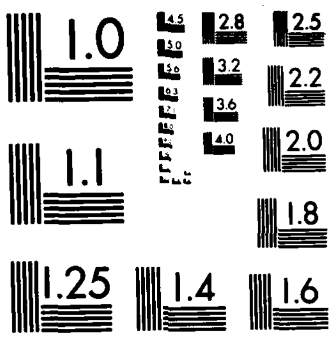
Summary of Data Set I-Based Schedules. After each of the ten years were run, CSNAS highlighted the minor discrepancies which were due to the input approximations. These highlighted errors indicate that CSNAS can detect even minor schedule deviations. Additionally, it was found that tracking the activities and events that unfolded over the ten-year period was simple.

Yearly Analysis of Template Schedules. Building a network using the published projected schedules omits some important tasks which are required to accomplish the "Big 21". In an attempt to better evaluate CSNAS's ability to highlight discrepancies, the template approach was followed. The use of durations for some of the activities provides an opportunity to evaluate CSNAS's capability to accept updates and demonstrate its versatility at error detection.

A second data set was used to modify and expand the existing data set I yearly networks. Information obtained from the data set II networks correlated directly with data set I in the first four years (1977-1980) and in 1986. Information derived from the 1981-1985 networks provided more insight into CSNAS's highlighting capabilities. Therefore, the analyses and a general summary of each year's total highlighted discrepancies is provided in later pages.

AD-A174 619 THE APPLICATION OF THE COMPUTER SUPPORTED NETWORK ANALYSIS SYSTEM (CSNAS) (U) AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH SCHOOL OF SYST C GRAY SEP 86 2/3

UNCLASSIFIED AFIT/GLM/LSY/86S-29 F/G 15/5 NL



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Additionally Appendix C has the all the data set I listings, the error indications and selected networks for examination.

1981 Template Analysis.

1981 CSNAS Reverse Pass. The CSNAS network was compared with the 1981 PLSS projected schedule and the reverse pass revealed the following information about the latest completion dates:

a. Task #391 - Limited Production Decision, scheduled for late October 1984, needed to be completed by 23 July 1984.

b. Task #381 - AFSARC IIIA, scheduled for early October 1984, needed to be completed by 8 May 1984.

c. Task #351 - NATO/USAFE Demonstration, scheduled for late February 1985, needed to be completed by 18 June 1984.

d. Task #361 - End of Testing Program, scheduled for late September 1984, needed to be completed by 23 April 1984.

e. Task #321 - Start DT&E/IOT&E, scheduled for late September 1983, needed to be completed by 25 April 1983.

1981 Template Summary. On 1 October 1981, CSNAS highlighted seven discrepancies. Two of the seven were the result of the one-month window and these were discounted. The other five addressed above were delays in the testing

program, its subsequent delay of the AFSARC IIIA process, production decisions impacts and delays in projected hardware deliveries. These were the major areas in jeopardy.

1982 Template Analysis.

1982 CSNAS Reverse Pass. The CSNAS network was compared with the 1982 PLSS projected schedule and the reverse pass revealed the following information about the latest completion dates:

a. Task #421 - First Hardware Delivery scheduled by late April 1985, was needed by 25 February 1985.

b. Task #431 - AFSARC IIB, scheduled for mid-March 1985, needed to be completed by 16 January 1985.

c. Task #391 - Limited Production Decision, scheduled for late October 1984, needed to be completed by 6 June 1984.

d. Task #381 - AFSARC IIIA, also scheduled for early October 1984, needed to be completed by 23 May 1984.

e. Task #351 - NATO/USAFE Demonstration, scheduled for late June 1985, needed to be completed by 2 May 1984.

f. Task #361 - End of Testing Program, scheduled for late July 1985, needed to be completed by 2 May 1984.

g. Task #321 - Start DT&E/IOT&E, scheduled for late August 1984, needed to be completed by 4 May 1983.

h. Task #311 - Full System Integration, scheduled for completion in late January, needed to be completed by 29 April 1983.

i. Task #211 - Long-Lead Money for Production, scheduled for release in October 1984, needed to be released by 2 May 1984.

1982 Template Summary. Eleven discrepancies were highlighted and two of the eleven were discounted. The discrepancies highlighted by CSNAS indicate that some of the major milestones of the program were expected to encounter approximately a two to four month delay. This appeared to be because full system integration was going to be delayed. This, in turn, would delay testing and subsequent AFSARC IIIA deliberations and production decisions.

1983 Template Analysis.

1983 CSNAS Reverse Pass. The CSNAS network was compared with the 1983 PLSS projected schedule and the reverse pass revealed the following information about the latest completion dates:

a. Task #441 - Full Production Decision, scheduled to be delivered by late March 1985, needed to be completed by 30 January 1985.

b. Task #431 - AFSARC IIB, scheduled for late March 1985, needed to be completed by 30 January 1985.

c. Task #401 - Contract Award, scheduled for completion in late October 1984, needed to be completed by 27 June 1984.

d. Task #391 - Limited Production Decision, scheduled for mid-October 1984, needed to be completed by 30 May 1984.

e. Task #381 - AFSARC IIIA, scheduled for early October 1984, needed to be completed by 16 May 1984.

f. Task #351 - NATO/USAFE Demonstration, scheduled for late June 1985, needed to be completed by 25 April 1984.

g. Task #361 - End Testing Program, scheduled for completion in late July 1985, needed to be completed by 25 July 1984 to successfully make the deployment effort.

h. Task #321 - Start DT&E/IOT&E, scheduled to be completed October 1984, needed to be completed by 29 February 1984.

i. Task #311 - Full System Integration Starts, scheduled for late May 1984, needed to have been completed by 17 June 1983.

<u>1983 Template Summary</u>. Eleven discrepancies were highlighted by CSNAS and two were discounted. Additionally, this was the first year that CSNAS analysis indicated that three program dates, which were already completed, should have been completed earlier. Two of these late dates were discounted. The other late date warning was the rephasing of the program's length which was actually completed in July 1983; but, which should have been completed by mid-November 1982 to preclude affecting any other activities/milestones.

Discrepancies identified by CSNAS on 1 October 1983 indicated that PLSS would encounter system integration problems and testing delays which would delay the AFSARCs and decisions to proceed with production.

<u>1984 Template Analysis</u>.

<u>1984 CSNAS Reverse Pass</u>. The CSNAS network was compared with the 1984 PLSS projected schedule and the reverse pass revealed the following information about the latest completion dates:

a. Task #401 - Contract Award, scheduled to be completed in late March 1985, needed to be completed by 24 January 1985.

b. Task #391 - Limited Production Decision, scheduled for completion in early February 1985, needed to be completed by 27 December 1984.

c. Task #351 - NATO/USAFE Demonstration, scheduled for completion in late June 1985, needed to be completed by 22 November 1983.

d. Task #361 - End Testing Program, scheduled to be completed in late January 1986, needed to be completed by 22 November 1984.

1984 Template Summary. Six discrepancies were highlighted and two were discounted. Additionally, CSNAS identified five late dates which were responsible for the highlighting. The discrepancies centered on the much-delayed System Critical Design Review, scheduled for December 1979 and December 1981, which was completed in March 1983. Its delays impacted the prototype delivery and the start of system integration. Additionally, future events expected to slip were testing, AFSARC IIIA, the limited production decision, and contract award.

1985 Template Analysis.

1985 CSNAS Reverse Pass. The CSNAS network was compared with the 1985 PLSS projected schedule and the reverse pass revealed the following information about the latest completion dates.

a. Task #401 - Contract Award for Limited Production, scheduled to be completed by late June 1986, needed to be complete by 24 January 1986.

b. Task #391 - Limited Production Decision, scheduled to be complete by late May 1986, needed to be complete by 27 December 1985.

c. Task #381 - AFSARC IIIA, scheduled for completion by late April 1986, needed to be complete by 13 December 1985.

d. Task #351 - NATO/USAFE Demonstration, scheduled for completion in late January 1986, needed to be complete by 22 November 1985.

e. Task #361 - End Testing Program, scheduled for late March 1986, needed to be complete by 22 November 1985.

f. Task #341 - End DT&E/IOT&E, scheduled to be complete by December 1985, should have been completed by 27 September 1985.

g. Task #331 - End Contractor Integrated Testing, scheduled for completion by late October 1985, needed to have been complete by 16 August 1985.

1985 Template Summary. Seven discrepancies were highlighted by CSNAS as potential problems facing the PLSS program and one late completed date was detected. This late date for the completion of contractor integrated testing is causing the delays expected through the AFSARC IIIA process,

the limited production decision and contract award. Schedule extensions for Initial Operational Capability had taken care of previous conflicts.

1986 Template Analysis.

1986 CSNAS Reverse Pass. The CSNAS network was compared with the 1986 PLSS projected schedule and the reverse pass revealed the following information about the latest completion dates:

1986 Template Summary. CSNAS evaluated the 1 July 1986 PLSS schedule as achievable and no discrepancies were highlighted, either in the reverse pass or late completion dates algorithm. This was due to cancellation of any deployment plans. Testing would continue until April 1987 at which time a program decision would be made.

The evaluation process provided general answers to the four investigative questions which served as the core of this research effort. The following discussion will categorize the findings as appropriate.

Discussion of Research Questions

Introduction. The objective of this research effort is to examine the value that the Computer Supported Network Analysis System (CSNAS) might provide a program manager when it is used to network weapon system acquisition (WSA) schedules. To achieve this objective, this research applied CSNAS to create two sets of ten yearly snapshots of the Precision Location Strike System's (PLSS) WSA process. This

study specifically addresses this research question: "Would it have been useful for the Precision Location Strike System (PLSS) System Program Office (SPO) to have used the Computer Supported Network Analysis System (CSNAS) to help manage the projected acquisition schedule of the program?" Four investigative questions were formulated for this research effort.

Research Question #1. "How effective is CSNAS at isolating the critical path -- the least flexible activities necessary for program success?"

CSNAS, like any other networking program, is very effective at isolating the program's critical path. The fundamental reason why a networking application exists is to analyze the complicated interrelationships of a program and provide a useful output product which highlights the critical path. CSNAS provides two outputs which highlight the critical path -- the printer network listing and the network plot. On the printer, the actual critical path's connections and boxes are created by using asterisks (*) for easy identification. On the network plot, CSNAS has the option to specify colors to highlight the critical path. Each revision of the network was promptly re-evaluated by CSNAS and the new critical path was correctly computed and identified to the user. The user may then use CSNAS to evaluate alternative courses of action, based upon managerial interpretations, priorities and constraints. An

alternative can be input and be assessed by CSNAS. The CSNAS generated output products can then be re-examined and the cycle continued until management reaches an acceptable course of action.

Research Question #2. "Could CSNAS have identified and highlighted PLSS's historically documented schedule changes *a priori*?"

Using data set I, CSNAS highlighted little. The first nine yearly networks created and evaluated by CSNAS highlighted some minor schedule discrepancies indicating that the CSNAS computed schedule and the PLSS projected schedule were within a month of each other. These minor discrepancies resulted from the methodology used to set milestone dates. This first phase of the research indicated that if feasible schedules are extended and more time is given to accomplish the same tasks, the new schedules are also achievable.

Data set II, which makes use of the template data set, provided more information on CSNAS's ability to highlight. Again, the first four yearly networks highlighted only minor discrepancies which were of no importance. The years 1981 through 1985 were where CSNAS's ability to identify and highlight were truly tested.

Throughout these years, as noted above, numerous schedule changes were made; some of these did not accurately reflect the actual durations of the tasks. Consequently,

activities that eventually took longer than originally scheduled are highlighted as potential problem areas, a priori. It should be noted, however, that the durations used in data set II were developed with perfect foresight. And, in fact, the extended durations may be the result of the externally-induced perturbations to the program. Because many of the problem areas for PLSS was externally induced it is unlikely that CSNAS could have highlighted them a priori, although it could certainly have been used to assess their impacts.

Research Question #3. "How responsive is CSNAS to changing networks and schedules?"

CSNAS provides a simple and accurate method of facilitating the changes which occurred in the PLSS program. Once the first year of data set I was input and the basic program data base listing was created, it became a simple matter to update the network for each subsequent snapshot. Any specific changes which occurred could be quickly updated by selection of the specific element and inputting the changes; be they completions, reschedules, new tasks, or as in 1986, deletions to the schedules when compared to the previous year. This procedure was followed each year and demonstrated that CSNAS was very responsive to projected schedule changes. All changes and connections were easily and accurately accommodated.

The decision to expand the networks by applying a new set of input data, which became a template of reasonable task durations, also created no problems. The times of the various tasks were input over the ten yearly networks originally created and CSNAS accurately readjusted the schedules and networks to incorporate the modifications and updating. Critical paths and slacks were computed and all schedules and networks were adjusted automatically.

This is where CSNAS is judged to be the most versatile. The menu selection capability allowed picking only the elements needed and the program insured that the input data was entered only in the expected format. Otherwise, the menu forced the user to re-input the data. This helped greatly to insure the accuracy of the input data and thus to increase the versatility that CSNAS demonstrated in accommodating changes.

Research Question #4. " Could the use of CSNAS have improved the overall PLSS program management process?"

CSNAS provided a schedule depicting the events and milestones necessary to support the weapon system acquisition process. The output products, a schedule and printed or plotted networks, provide a means for visually assessing schedule progress and help focus management attention on activities/milestones which appear to be in jeopardy.

As noted above, CSNAS has the ability to logically sequence activities/milestones in the proper order. Additionally, it has the ability to develop schedules and plots which are accurate.

As noted when using data set II of the experiment, CSNAS has the ability to identify and flag activities/ milestones which appear to be in jeopardy with regard to schedule. This is certainly an essential characteristic of a networking tool if it is to be useful to management.

<u>Summary</u>

Program management of a research and development (R&D) undertaking is extremely difficult. This is especially true in PLSS when the state-of-the-art is being pushed to the limit or there is great uncertainty of continued external support. CSNAS provides a schedule and network depicting the activities/milestones deemed necessary to track each year. CSNAS provides a means for evaluating schedule progress and helps focus managerial attention. Beyond that, CSNAS, as would most networking applications, does not provide any special information to help determine alternative courses of action or to make the tough decisions on which resources must or could be reallocated. This is subjective and is often done in a real-time mode. People are trained and paid to develop these "what-if" propositions. Once they are developed, CSNAS as the workhorse, is used to review the networks and determine the

results of the new plan. If the networking world is known and networked properly, the job of the program manager and CSNAS is greatly simplified. If the world changes drastically and for reasons unanticipated and unnetworked, then neither CSNAS nor any networking application can help the program manager manage the program.

Because of the macro-approach of the methodology, it is unclear whether CSNAS could have improved the PLSS program management. It is apparent that there was a great deal of externally-imposed limitations which precluded the attainment of the original schedule. CSNAS could not have predicted that. However, because of the portability and ease of use that CSNAS provides, it is possible that CSNAS could have been most useful in the SPO environment -- used for internal program status tracking and as a reporting and briefing tool.

IV. Conclusions and Recommendations

Conclusions

This research effort centered on an evaluation of the Computer Supported Network Analysis System (CSNAS). Data available from an Air Force project located at Wright-Patterson Air Force Base, Ohio was used to create ten yearly macro-management snapshots of the projected schedule of the program. The program, the Precision Location Strike System (PLSS) had experienced a long history of research, development, and testing prior to the commencement of this research effort in the fall of 1985. Projected schedules were expanding beyond the original time limits set for key milestones in the deployment effort. Additionally, the funding priority seemed to be decreasing and each new decrease seemed to dilute the program's scope and operational concept even more. Finally, just weeks prior to completion of this research study, the program was cancelled.

While some program delays could be attributed to hardware change decisions (i.e., F-16 and TR-1), most of the changes were directly or indirectly driven, even from the earliest days of the program, to the almost annual series of budgeting cuts and their subsequent rephasing of the program.

The research used a methodology which was flexible enough to incorporate the known and unknown events which occurred throughout the PLSS program's life. This was done through an approach which used two sets of input data. The first set of input data was used by CSNAS to create ten yearly schedules and networks which aligned precisely with the published projected PLSS schedule.

A second set of input data expanded the networks to include a template of reasonable durations for all the networked activities/milestones published. These durations were derived from a foresight analysis of the 1985 PLSS program and the durations were consistent throughout the years. This template network allowed CSNAS to examine the PLSS program in a more constrained environment and provide more data with which to evaluate the effectiveness of CSNAS as a managerial tool.

CSNAS created proper networks and schedules from the initial data set and no significant discrepancies were highlighted. This could be attributed to actual PLSS projected schedule extensions which were occurring.

When using the second data set to create networks and schedules, CSNAS also reported no significant highlighting in 1977 through 1980 and in 1985. In the 1981-1984 networks, CSNAS highlighted some scheduling discrepancies that indicate it can detect scheduling problems.

Many of the scheduling problems were the result of externally-imposed decisions. CSNAS did not effectively serve as a soothsayer to predict Congressional temperament and its subsequent budgetary impacts. However, once these external impacts were made to the program, CSNAS again proved useful to reassess the new projected schedule, highlighting the critical path, and to point out schedule discrepancies. Once identified, management might have been able to better manage the WSA process.

Summary

The Computer Supported Network Analysis System (CSNAS) is an effective and useful networking and scheduling tool which provides any potential and dedicated user with an important contribution. Like any networking model, CSNAS is not a management panacea. The use of CSNAS will not manage a program for the program manager nor is it a guarantee of program success. But if it is properly implemented, CSNAS has the capability to provide management with effective, efficient, and timely status information from which enlightened and intelligent management decisions can be made. If the program is in trouble from poor scheduling of internally controlled activities, CSNAS may be of great value to the program manager. However, CSNAS can only network "foreseen" activities/milestones; it cannot provide help for unforeseen scheduling problems which occur due to budget cuts and program redirection. CSNAS does provide a

useful capability to, after the fact, include these events, chart the critical path and determine the impact of these events on the schedule of the program.

This research effort indicates that CSNAS performs as advertised:

(1) It effectively isolates the critical path of the network.

(2) It is responsive to changing input data.

(3) It identifies and highlights schedule problem areas.

(4) Its use could be expected to help a program manager better manage a weapon system acquisition.

CSNAS, on the other hand, possesses no especially enhanced capability which other modern networking software applications do not have. Rather its main values could be highlighted under availability, affordability, supportability, portability, and versatility. CSNAS is available for every model of Zenith 100/150 or PC-compatible desk-top computer that DOD owns. This is in addition to its mainframe computer capability at Wright-Patterson AFB, Ohio.

It is Air Force developed, owned and maintained. It costs nothing to acquire. Training and technical assistance are available from the CSNAS system managers.

AFALC maintains a two-man branch whose principle purpose is to support CSNAS development, refinement, and understanding. The managers do this by conducting training

classes and answering queries posed to them through the day. Software or documentation problems are quickly identified and corrected with the next version. Thus, CSNAS is under constant change because of the ongoing system management it enjoys.

CSNAS is floppy disk resident; therefore, it can move about between offices and agencies as the program dictates. It can easily become a simple managerial reporting system or be expanded into a technological assessment and tracking system based on the needs of the program manager. This is especially important when a complete series of tasks must be monitored at a typical Air Force agency, but the agency has no funds to contract out the monitoring process. Perhaps the niche where CSNAS best fits the bill is in the small organization that requires a reporting and tracking system.

Recommendations for Future Research

While this research effort looks at only the highest macro-managerial aspects of the weapon system acquisition process, "the Big 21", further research is recommended on just one node of the WSA process. Each event depicted represents a slew of lower level events and activities pertaining to numerous processes or components which can be networked in great detail to provide a micro-view of any window of the WSA process of another program.

Further research is also recommended on another weapon system acquisition program to examine CSNAS's potential

ability to identify resource requirements. If it performs well in this manner then management can use it, if necessary, to reallocate resources to achieve schedule goals.

These types of research efforts should provide a more comprehensive evaluation of the total value CSNAS may contribute to the program management of a weapon system acquisition process.

Appendix A: PLSS Yearly Projected Schedules

Appendix A contains the ten yearly projected schedules of the Precision Location Strike System (PLSS). Each two-page schedule categorizes each event, activity or milestone, known or anticipated, into the appropriate category of the "Big 21" of the typical weapon system acquisition (WSA) process covered in this report.

These schedules represent a snapshot of the PLSS program at the beginning of the fiscal year. Milestones are either completed or scheduled and the appropriate date is indicated. Any changes from the previous snapshot are indicated by an underlined date.

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1977

S=Scheduled   C=Completed

Underlined Dates Indicate A Change From Previous Year

1.	PROGRAM AUTHORIZED		
	AF Requirements Action Directive	C-	Jul 71
	DSD Directs TOA/DME System	C-	Oct 71
2.	NEW START APPROVED		
	Area Coordination Paper #4	C-	Mar 72
	TAF ROC Released	C-	1 May 74
	DSARC I.	C-	7 Nov 74
3.	PROGRAM STRATEGY ESTABLISHED		
	ALSS Demonstration in Europe	C-	Mar 75
	PLSS Two-Phase Program	C-	Apr 75
4.	REQUEST FOR PROPOSALS RELEASED		
	Phase I RFP Released	C-	4 Aug 75
	Award of Two Contracts	C-	Mar 76
	Phase II RFP Released	C-	21 Jul 76
5.	DEVELOP CONTRACTORS PROPOSALS		
	Receive FSD Proposals	C-	7 Sep 76
	DSARC IIA	C-	26 Jul 77
6.	SOURCE SELECTION		
	DSARC Approval DCP #129	C-	23 Sep 77
7.	CONTRACT AWARDED		
	FSD Contract Award	C-	30 Sep 77
8.	FULL SCALE DEVELOPMENT		
	System Requirements Review	S-	Jan 78
	System Design Review	S-	May 78
9.	CONTRACTORS PRELIMINARY DESIGN REVIEW		
	Preliminary Design Review	S-	Nov 78
	DSARC IIB.	S-	Feb 79
10.	SYSTEM CRITICAL DESIGN REVIEW		
	System Critical Design Review	S-	Sep 79
11.	CONTRACTOR'S FABRICATION AND ASSEMBLY		
	Prototype Hardware Built		

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1977

S=Scheduled C=Completed

Underlined Dates Indicate A Change From Previous Year

12.	PROTOTYPE HARDWARE DELIVERED		
	Full System Integration Begins		
13.	TEST PROGRAM		
	Start DT&E/IOT&E	S-	Feb 81
	End Testing Program	S-	Feb 82
14.	PROGRAM DECISION		
	DSARC III.	S-	Jan 82
15.	PRODUCTION START-UP		
	Production Start-Up		
16.	FIRST HARDWARE DELIVERED		
	First Hardware Delivered		
17.	INITIAL OPERATIONAL CAPABILITY		
	IOC.	S-	Jun 84
18.	MAXIMUM PRODUCTION RATE ACHIEVED		
	Maximum Production Rate Achieved		
19.	FULLY OPERATIONAL CAPABILITY		
	Fully Operational Capability		
20.	PROGRAM MANAGEMENT RESPONSIBILITY TRANSFER		
	PMRT		
21.	DEPLOYMENT COMPLETE		
	Deployment Complete		

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1978

S=Scheduled C=Completed

Underlined Dates Indicate A Change From Previous Year

1.	PROGRAM AUTHORIZED		
	AF Requirements Action Directive	C-	Jul 71
	DSD Directs TOA/DME System	C-	Oct 71
2.	NEW START APPROVED		
	Area Coordination Paper #4	C-	Mar 72
	TAF ROC Released	C-	1 May 74
	DSARC I.	C-	7 Nov 74
3.	PROGRAM STRATEGY ESTABLISHED		
	ALSS Demonstration in Europe	C-	Mar 75
	PLSS Two-Phase Program	C-	Apr 75
4.	REQUEST FOR PROPOSALS RELEASED		
	Phase I RFP Released	C-	4 Aug 75
	Award of Two Contracts	C-	Mar 76
	Phase II RFP Released	C-	21 Jul 76
5.	DEVELOP CONTRACTORS PROPOSALS		
	Receive FSD Proposals	C-	7 Sep 76
	DSARC IIA	C-	26 Jul 77
6.	SOURCE SELECTION		
	DSARC Approval DCP #129	C-	23 Sep 77
7.	CONTRACT AWARDED		
	FSD Contract Award	C-	30 Sep 77
8.	FULL SCALE DEVELOPMENT		
	System Requirements Review	C-	Jan 78
	System Design Review	C-	May 78
9.	CONTRACTORS PRELIMINARY DESIGN REVIEW		
	Preliminary Design Review	S-	Nov 78
	DSARC IIB.	S-	Feb 79
10.	SYSTEM CRITICAL DESIGN REVIEW		
	System Critical Design Review	S-	Sep 79
11.	CONTRACTOR'S FABRICATION AND ASSEMBLY		
	Prototype Hardware Built		

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1978

S=Scheduled C=Completed

Underlined Dates Indicate A Change From Previous Year

12.	PROTOTYPE HARDWARE DELIVERED		
	Full System Integration Begins		
13.	TEST PROGRAM		
	Start DT&E/IOT&E	S-	Feb 81
	End Testing Program	S-	Feb 82
14.	PROGRAM DECISION		
	DSARC III.	S-	Jan 82
15.	PRODUCTION START-UP		
	Production Start-Up		
16.	FIRST HARDWARE DELIVERED		
	First Hardware Delivered		
17.	INITIAL OPERATIONAL CAPABILITY		
	IOC.	S-	Jun 84
18.	MAXIMUM PRODUCTION RATE ACHIEVED		
	Maximum Production Rate Achieved		
19.	FULLY OPERATIONAL CAPABILITY		
	Fully Operational Capability		
20.	PROGRAM MANAGEMENT RESPONSIBILITY TRANSFER		
	PMRT		
21.	DEPLOYMENT COMPLETE		
	Deployment Complete		

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1979

S=Scheduled C=Completed

Underlined Dates Indicate A Change From Previous Year

1.	PROGRAM AUTHORIZED		
	AF Requirements Action Directive	C-	Jul 71
	DSD Directs TOA/DME System	C-	Oct 71
2.	NEW START APPROVED		
	Area Coordination Paper #4	C-	Mar 72
	TAF ROC Released	C-	1 May 74
	DSARC I.	C-	7 Nov 74
3.	PROGRAM STRATEGY ESTABLISHED		
	ALSS Demonstration in Europe	C-	Mar 75
	PLSS Two-Phase Program	C-	Apr 75
4.	REQUEST FOR PROPOSALS RELEASED		
	Phase I RFP Released	C-	4 Aug 75
	Award of Two Contracts	C-	Mar 76
	Phase II RFP Released	C-	21 Jul 76
5.	DEVELOP CONTRACTORS PROPOSALS		
	Receive FSD Proposals	C-	7 Sep 76
	DSARC IIA	C-	26 Jul 77
6.	SOURCE SELECTION		
	DSARC Approval DCP #129	C-	23 Sep 77
7.	CONTRACT AWARDED		
	FSD Contract Award	C-	30 Sep 77
8.	FULL SCALE DEVELOPMENT		
	System Requirements Review	C-	Jan 78
	System Design Review	C-	May 78
	ASD Program Funds Cut	C-	Dec 78
	Funds Capped and Shifted	C-	Mar 79
9.	CONTRACTORS PRELIMINARY DESIGN REVIEW		
	Preliminary Design Review	S-	Oct 79
	TR-1 Selected as ARV	C-	30 Aug 79
	DSARC IIB.		CANCELLED
10.	SYSTEM CRITICAL DESIGN REVIEW		
	System Critical Design Review	S-	Dec 79
11.	CONTRACTOR'S FABRICATION AND ASSEMBLY		
	Prototype Hardware Built		

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1979

S=Scheduled   C=Completed

Underlined Dates Indicate A Change From Previous Year

12.	PROTOTYPE HARDWARE DELIVERED		
	Full System Integration Begins		
13.	TEST PROGRAM		
	Start DT&E/IOT&E	S-	Feb 81
	End Testing Program	S-	Feb 82
14.	PROGRAM DECISION		
	DSARC III.	S-	Jan 82
15.	PRODUCTION START-UP		
	Production Start-Up		
16.	FIRST HARDWARE DELIVERED		
	First Hardware Delivered		
17.	INITIAL OPERATIONAL CAPABILITY		
	IOC.	S-	Jun 84
18.	MAXIMUM PRODUCTION RATE ACHIEVED		
	Maximum Production Rate Achieved		
19.	FULLY OPERATIONAL CAPABILITY		
	Fully Operational Capability		
20.	PROGRAM MANAGEMENT RESPONSIBILITY TRANSFER		
	PMRT		
21.	DEPLOYMENT COMPLETE		
	Deployment Complete		

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1980

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Underlined Dates Indicate A Change From Previous Year

1.	PROGRAM AUTHORIZED		
	AF Requirements Action Directive	C-	Jul 71
	DSD Directs TOA/DME System	C-	Oct 71
2.	NEW START APPROVED		
	Area Coordination Paper #4	C-	Mar 72
	TAF ROC Released	C-	1 May 74
	DSARC I.	C-	7 Nov 74
3.	PROGRAM STRATEGY ESTABLISHED		
	ALSS Demonstration in Europe	C-	Mar 75
	PLSS Two-Phase Program	C-	Apr 75
4.	REQUEST FOR PROPOSALS RELEASED		
	Phase I RFP Released	C-	4 Aug 75
	Award of Two Contracts	C-	Mar 76
	Phase II RFP Released	C-	21 Jul 76
5.	DEVELOP CONTRACTORS PROPOSALS		
	Receive FSD Proposals	C-	7 Sep 76
	DSARC IIA	C-	26 Jul 77
6.	SOURCE SELECTION		
	DSARC Approval DCP #129	C-	23 Sep 77
7.	CONTRACT AWARDED		
	FSD Contract Award	C-	30 Sep 77
8.	FULL SCALE DEVELOPMENT		
	System Requirements Review	C-	Jan 78
	System Design Review	C-	May 78
	ASD Program Funds Cut	C-	Dec 78
	Funds Capped and Shifted	C-	Mar 79
9.	CONTRACTORS PRELIMINARY DESIGN REVIEW		
	Preliminary Design Review	C-	Oct 79
	TR-1 Selected as ARV	C-	30 Aug 79
	Submit Program Restructure	C-	Jan 80
	DSARC IIB.		CANCELLED
10.	SYSTEM CRITICAL DESIGN REVIEW		
	System Critical Design Review	S-	Dec 81
11.	CONTRACTOR'S FABRICATION AND ASSEMBLY		
	Prototype Hardware Built		

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1980

S=Scheduled C=Completed

Underlined Dates Indicate A Change From Previous Year

12.	PROTOTYPE HARDWARE DELIVERED		
	Full System Integration Begins		
13.	TEST PROGRAM		
	Start DT&E/IOT&E	S-	Mar 83
	End Testing Program	S-	Feb 84
14.	PROGRAM DECISION		
	DSARC III.	S-	May 84
15.	PRODUCTION START-UP		
	Production Start-Up		
16.	FIRST HARDWARE DELIVERED		
	First Hardware Delivered		
17.	INITIAL OPERATIONAL CAPABILITY		
	IOC.	S-	Sep 86
18.	MAXIMUM PRODUCTION RATE ACHIEVED		
	Maximum Production Rate Achieved		
19.	FULLY OPERATIONAL CAPABILITY		
	Fully Operational Capability		
20.	PROGRAM MANAGEMENT RESPONSIBILITY TRANSFER		
	PMRT		
21.	DEPLOYMENT COMPLETE		
	Deployment Complete		

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1981

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Underlined Dates Indicate A Change From Previous Year

1.	PROGRAM AUTHORIZED		
	AF Requirements Action Directive	C-	Jul 71
	DSD Directs TOA/DME System	C-	Oct 71
2.	NEW START APPROVED		
	Area Coordination Paper #4	C-	Mar 72
	TAF ROC Released	C-	1 May 74
	DSARC I.	C-	7 Nov 74
3.	PROGRAM STRATEGY ESTABLISHED		
	ALSS Demonstration in Europe	C-	Mar 75
	PLSS Two-Phase Program	C-	Apr 75
4.	REQUEST FOR PROPOSALS RELEASED		
	Phase I RFP Released	C-	4 Aug 75
	Award of Two Contracts	C-	Mar 76
	Phase II RFP Released	C-	21 Jul 76
5.	DEVELOP CONTRACTORS PROPOSALS		
	Receive FSD Proposals	C-	7 Sep 76
	DSARC IIA	C-	26 Jul 77
6.	SOURCE SELECTION		
	DSARC Approval DCP #129	C-	23 Sep 77
7.	CONTRACT AWARDED		
	FSD Contract Award	C-	30 Sep 77
8.	FULL SCALE DEVELOPMENT		
	System Requirements Review	C-	Jan 78
	System Design Review	C-	May 78
	ASD Program Funds Cut	C-	Dec 78
	Funds Capped and Shifted	C-	Mar 79
9.	CONTRACTORS PRELIMINARY DESIGN REVIEW		
	Preliminary Design Review	C-	Oct 79
	TR-1 Selected as ARV	C-	30 Aug 79
	Submit Program Restructure	C-	Jan 80
	Withdrawal of Major System Designation . . .	C-	10 Jun 81
	F-16 Replaces F-4 as VNS	C-	Sep 81
	DSARC IIB.		CANCELLED
10.	SYSTEM CRITICAL DESIGN REVIEW		
	System Critical Design Review	S-	Dec 81
11.	CONTRACTOR'S FABRICATION AND ASSEMBLY		
	Prototype Hardware Built		

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1981

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Underlined Dates Indicate A Change From Previous Year

12.	PROTOTYPE HARDWARE DELIVERED		
	Full System Integration Begins	S-	Jan 83
13.	TEST PROGRAM		
	Start DT&E/IOT&E	S-	Sep 83
	End Testing Program	S-	Sep 84
	NATO/USAFE Demonstration	S-	Feb 85
14.	PROGRAM DECISION		
	DSARC III.		CANCELLED
	AFSARC IIIA	S-	Oct 84
	Limited Production Decision	S-	Oct 84
15.	PRODUCTION START-UP		
	Release Long Lead Monies for Production . .	S-	Sep 83
	Production Start-Up		
16.	FIRST HARDWARE DELIVERED		
	First Hardware Delivered		
	AFSARC IIIB	S-	Mar 85
	Full Production Decision	S-	Mar 85
17.	INITIAL OPERATIONAL CAPABILITY		
	IOC.	S-	Sep 86
18.	MAXIMUM PRODUCTION RATE ACHIEVED		
	Maximum Production Rate Achieved		
19.	FULLY OPERATIONAL CAPABILITY		
	Fully Operational Capability	S-	Sep 88
20.	PROGRAM MANAGEMENT RESPONSIBILITY TRANSFER		
	PMRT		
21.	DEPLOYMENT COMPLETE		
	Deployment Complete	S-	30 Sep 88

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1982

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Underlined Dates Indicate A Change From Previous Year

1.	PROGRAM AUTHORIZED		
	AF Requirements Action Directive	C-	Jul 71
	DSD Directs TOA/DME System	C-	Oct 71
2.	NEW START APPROVED		
	Area Coordination Paper #4	C-	Mar 72
	TAF ROC Released	C-	1 May 74
	DSARC I.	C-	7 Nov 74
3.	PROGRAM STRATEGY ESTABLISHED		
	ALSS Demonstration in Europe	C-	Mar 75
	PLSS Two-Phase Program	C-	Apr 75
4.	REQUEST FOR PROPOSALS RELEASED		
	Phase I RFP Released	C-	4 Aug 75
	Award of Two Contracts	C-	Mar 76
	Phase II RFP Released	C-	21 Jul 76
5.	DEVELOP CONTRACTORS PROPOSALS		
	Receive FSD Proposals	C-	7 Sep 76
	DSARC IIA	C-	26 Jul 77
6.	SOURCE SELECTION		
	DSARC Approval DCP #129	C-	23 Sep 77
7.	CONTRACT AWARDED		
	FSD Contract Award	C-	30 Sep 77
8.	FULL SCALE DEVELOPMENT		
	System Requirements Review	C-	Jan 78
	System Design Review	C-	May 78
	ASD Program Funds Cut	C-	Dec 78
	Funds Capped and Shifted	C-	Mar 79
9.	CONTRACTORS PRELIMINARY DESIGN REVIEW		
	Preliminary Design Review	C-	Oct 79
	TR-1 Selected as ARV	C-	30 Aug 79
	Submit Program Restructure	C-	Jan 80
	Withdrawal of Major System Designation	C-	10 Jun 81
	F-16 Replaces F-4 as VNS	C-	Sep 81
	Program Restart Submitted	<u>C-</u>	<u>Dec 81</u>
	DSARC IIB.		CANCELLED
10.	SYSTEM CRITICAL DESIGN REVIEW		
	System Critical Design Review	<u>S-</u>	<u>Mar 83</u>
11.	CONTRACTOR'S FABRICATION AND ASSEMBLY		
	Prototype Hardware Built	<u>S-</u>	<u>Oct 83</u>

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1982

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Underlined Dates Indicate A Change From Previous Year

12.	PROTOTYPE HARDWARE DELIVERED		
	Full System Integration Begins	S-	Jan 84
13.	TEST PROGRAM		
	Start DT&E/IOT&E	S-	Aug 84
	NATO/USAFE Demonstration	S-	Jun 85
	End Testing Program	S-	Jul 85
14.	PROGRAM DECISION		
	DSARC III.		CANCELLED
	AFSARC IIIA	S-	Oct 84
	Limited Production Decision	S-	Oct 84
15.	PRODUCTION START-UP		
	Release Long Lead Monies for Production . .	S-	Sep 84
	Production Start-Up		
16.	FIRST HARDWARE DELIVERED		
	AFSARC IIIB	S-	Mar 85
	Full Production Decision	S-	Mar 85
	First Hardware Delivered	S-	Apr 85
17.	INITIAL OPERATIONAL CAPABILITY		
	IOC.	S-	Sep 86
18.	MAXIMUM PRODUCTION RATE ACHIEVED		
	Maximum Production Rate Achieved		
19.	FULLY OPERATIONAL CAPABILITY		
	Fully Operational Capability	S-	Sep 88
20.	PROGRAM MANAGEMENT RESPONSIBILITY TRANSFER		
	PMRT		
21.	DEPLOYMENT COMPLETE		
	Deployment Complete	S-	30 Sep 88

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1983

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Underlined Dates Indicate A Change From Previous Year

1.	PROGRAM AUTHORIZED		
	AF Requirements Action Directive	C-	Jul 71
	DSD Directs TOA/DME System	C-	Oct 71
2.	NEW START APPROVED		
	Area Coordination Paper #4	C-	Mar 72
	TAF ROC Released	C-	1 May 74
	DSARC I.	C-	7 Nov 74
3.	PROGRAM STRATEGY ESTABLISHED		
	ALSS Demonstration in Europe	C-	Mar 75
	PLSS Two-Phase Program	C-	Apr 75
4.	REQUEST FOR PROPOSALS RELEASED		
	Phase I RFP Released	C-	4 Aug 75
	Award of Two Contracts	C-	Mar 76
	Phase II RFP Released	C-	21 Jul 76
5.	DEVELOP CONTRACTORS PROPOSALS		
	Receive FSD Proposals	C-	7 Sep 76
	DSARC IIA	C-	26 Jul 77
6.	SOURCE SELECTION		
	DSARC Approval DCP #129	C-	23 Sep 77
7.	CONTRACT AWARDED		
	FSD Contract Award	C-	30 Sep 77
8.	FULL SCALE DEVELOPMENT		
	System Requirements Review	C-	Jan 78
	System Design Review	C-	May 78
	ASD Program Funds Cut	C-	Dec 78
	Funds Capped and Shifted	C-	Mar 79
9.	CONTRACTORS PRELIMINARY DESIGN REVIEW		
	Preliminary Design Review	C-	Oct 79
	TR-1 Selected as ARV	C-	30 Aug 79
	Submit Program Restructure	C-	Jan 80
	Withdrawal of Major System Designation	C-	10 Jun 81
	F-16 Replaces F-4 as VNS	C-	Sep 81
	Program Restart Submitted	C-	Dec 81
	DSARC IIB.		CANCELLED
10.	SYSTEM CRITICAL DESIGN REVIEW		
	System Critical Design Review	C-	Mar 83
11.	CONTRACTOR'S FABRICATION AND ASSEMBLY		
	Rephase Program's Length	C-	Jul 83
	Prototype Hardware Built	S-	Oct 83

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1983

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Underlined Dates Indicate A Change From Previous Year

12.	PROTOTYPE HARDWARE DELIVERED		
	Full System Integration Begins	S-	May 84
13.	TEST PROGRAM		
	Start DT&E/IOT&E	S-	Oct 84
	NATO/USAFE Demonstration	S-	Jun 85
	End Testing Program	S-	Jul 85
	Start FOT&E Phase I	S-	Feb 86
14.	PROGRAM DECISION		
	DSARC III.		CANCELLED
	AFSARC IIIA	S-	Oct 84
	Limited Production Decision	S-	Oct 84
15.	PRODUCTION START-UP		
	Release Long Lead Monies for Production . .	S-	Oct 84
	Award Production Contract	S-	Oct 84
	Production Start-Up		
16.	FIRST HARDWARE DELIVERED		
	AFSARC IIIB	S-	Mar 85
	Full Production Decision	S-	Mar 85
	First Hardware Delivered	S-	Apr 85
17.	INITIAL OPERATIONAL CAPABILITY		
	IOC.	S-	Sep 86
18.	MAXIMUM PRODUCTION RATE ACHIEVED		
	Maximum Production Rate Achieved		
19.	FULLY OPERATIONAL CAPABILITY		
	Fully Operational Capability	S-	Sep 88
20.	PROGRAM MANAGEMENT RESPONSIBILITY TRANSFER		
	PMRT		
21.	DEPLOYMENT COMPLETE		
	Deployment Complete	S-	30 Sep 88

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1984

S=Scheduled C=Completed

Underlined Dates Indicate A Change From Previous Year

1.	PROGRAM AUTHORIZED		
	AF Requirements Action Directive	C-	Jul 71
	DSD Directs TOA/DME System	C-	Oct 71
2.	NEW START APPROVED		
	Area Coordination Paper #4	C-	Mar 72
	TAF ROC Released	C-	1 May 74
	DSARC I.	C-	7 Nov 74
3.	PROGRAM STRATEGY ESTABLISHED		
	ALSS Demonstration in Europe	C-	Mar 75
	PLSS Two-Phase Program	C-	Apr 75
4.	REQUEST FOR PROPOSALS RELEASED		
	Phase I RFP Released	C-	4 Aug 75
	Award of Two Contracts	C-	Mar 76
	Phase II RFP Released	C-	21 Jul 76
5.	DEVELOP CONTRACTORS PROPOSALS		
	Receive FSD Proposals	C-	7 Sep 76
	DSARC IIA	C-	26 Jul 77
6.	SOURCE SELECTION		
	DSARC Approval DCP #129	C-	23 Sep 77
7.	CONTRACT AWARDED		
	FSD Contract Award	C-	30 Sep 77
8.	FULL SCALE DEVELOPMENT		
	System Requirements Review	C-	Jan 78
	System Design Review	C-	May 78
	ASD Program Funds Cut	C-	Dec 78
	Funds Capped and Shifted	C-	Mar 79
9.	CONTRACTORS PRELIMINARY DESIGN REVIEW		
	Preliminary Design Review	C-	Oct 79
	TR-1 Selected as ARV	C-	30 Aug 79
	Submit Program Restructure	C-	Jan 80
	Withdrawal of Major System Designation	C-	10 Jun 81
	F-16 Replaces F-4 as VNS	C-	Sep 81
	Program Restart Submitted	C-	Dec 81
	DSARC IIB.		CANCELLED
10.	SYSTEM CRITICAL DESIGN REVIEW		
	System Critical Design Review	C-	Mar 83
11.	CONTRACTOR'S FABRICATION AND ASSEMBLY		
	Rephase Program's Length	C-	Jul 83
	Prototype Hardware Built	<u>C-</u>	<u>Oct 83</u>

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1984

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Underlined Dates Indicate A Change From Previous Year

12.	PROTOTYPE HARDWARE DELIVERED		
	First Flight for System Integration	C-	Dec 83
	Full System Integration Begins	C-	Jul 84
13.	TEST PROGRAM		
	Start DT&E/IOT&E	S-	Oct 84
	NATO/USAFE Demonstration	S-	Jun 85
	End Testing Program	S-	Jan 86
	Start FOT&E Phase I	S-	Feb 86
14.	PROGRAM DECISION		
	DSARC III.		CANCELLED
	AFSARC IIIA	S-	Jan 85
	Limited Production Decision	S-	Feb 85
15.	PRODUCTION START-UP		
	Release Long Lead Monies for Production . .	S-	Oct 84
	Award Production Contract	S-	Mar 85
	Production Start-Up		
16.	FIRST HARDWARE DELIVERED		
	AFSARC IIIB	S-	Aug 85
	Full Production Decision	S-	Aug 85
	First Hardware Delivered	S-	Feb 86
17.	INITIAL OPERATIONAL CAPABILITY		
	IOC.	S-	Feb 87
18.	MAXIMUM PRODUCTION RATE ACHIEVED		
	Maximum Production Rate Achieved		
19.	FULLY OPERATIONAL CAPABILITY		
	Fully Operational Capability	S-	Feb 89
20.	PROGRAM MANAGEMENT RESPONSIBILITY TRANSFER		
	PMRT	S-	Mar 89
21.	DEPLOYMENT COMPLETE		
	Deployment Complete	S-	31 Mar 89

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1985

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Underlined Dates Indicate A Change From Previous Year

1.	PROGRAM AUTHORIZED		
	AF Requirements Action Directive	C-	Jul 71
	DSD Directs TOA/DME System	C-	Oct 71
2.	NEW START APPROVED		
	Area Coordination Paper #4	C-	Mar 72
	TAF ROC Released	C-	1 May 74
	DSARC I.	C-	7 Nov 74
3.	PROGRAM STRATEGY ESTABLISHED		
	ALSS Demonstration in Europe	C-	Mar 75
	PLSS Two-Phase Program	C-	Apr 75
4.	REQUEST FOR PROPOSALS RELEASED		
	Phase I RFP Released	C-	4 Aug 75
	Award of Two Contracts	C-	Mar 76
	Phase II RFP Released	C-	21 Jul 76
5.	DEVELOP CONTRACTORS PROPOSALS		
	Receive FSD Proposals	C-	7 Sep 76
	DSARC IIA	C-	26 Jul 77
6.	SOURCE SELECTION		
	DSARC Approval DCP #129	C-	23 Sep 77
7.	CONTRACT AWARDED		
	FSD Contract Award	C-	30 Sep 77
8.	FULL SCALE DEVELOPMENT		
	System Requirements Review	C-	Jan 78
	System Design Review	C-	May 78
	ASD Program Funds Cut	C-	Dec 78
	Funds Capped and Shifted	C-	Mar 79
9.	CONTRACTORS PRELIMINARY DESIGN REVIEW		
	Preliminary Design Review	C-	Oct 79
	TR-1 Selected as ARV	C-	30 Aug 79
	Submit Program Restructure	C-	Jan 80
	Withdrawal of Major System Designation	C-	10 Jun 81
	F-16 Replaces F-4 as VNS	C-	Sep 81
	Program Restart Submitted	C-	Dec 81
	DSARC IIB.		CANCELLED
10.	SYSTEM CRITICAL DESIGN REVIEW		
	System Critical Design Review	C-	Mar 83
11.	CONTRACTOR'S FABRICATION AND ASSEMBLY		
	Rephase Program's Length	C-	Jul 83
	Prototype Hardware Built	C-	Oct 83

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 October 1985

S=Scheduled C=Completed

Underlined Dates Indicate A Change From Previous Year

12.	PROTOTYPE HARDWARE DELIVERED		
	First Flight for System Integration	C-	Dec 83
	Full System Integration Begins	C-	Jul 84
13.	TEST PROGRAM		
	Start Contractor Integrated Testing	C-	Oct 84
	End Contractor Integrated Testing	S-	Oct 85
	Start DT&E/IOT&E Testing	S-	Dec 85
	NATO/USAFE Demonstration	S-	Jan 86
	End Combined DT&E/IOT&E Testing	S-	Mar 86
	Start FOT&E Phase I	S-	Jun 86
14.	PROGRAM DECISION		
	DSARC III		CANCELLED
	AFSARC IIIA	S-	Apr 86
	Limited Production Decision	S-	May 86
15.	*PRODUCTION START-UP*		
	Release Long Lead Monies for Production	C-	Oct 84
	Award Production Contract	S-	Jun 86
	Production Start-Up		
16.	FIRST HARDWARE DELIVERED		
	AFSARC IIIB	S-	Aug 86
	Full Production Decision	S-	Aug 86
	First Hardware Delivered	S-	Dec 86
17.	INITIAL OPERATIONAL CAPABILITY		
	IOC	S-	Feb 87
18.	MAXIMUM PRODUCTION RATE ACHIEVED		
	Maximum Production Rate Achieved		
19.	FULLY OPERATIONAL CAPABILITY		
	Fully Operational Capability	S-	Feb 89
20.	PROGRAM MANAGEMENT RESPONSIBILITY TRANSFER		
	PMRT	S-	Mar 89
21.	DEPLOYMENT COMPLETE		
	Deployment Complete	S-	31 Mar 89

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 July 1986

S=Scheduled C=Completed

Underlined Dates Indicate A Change From Previous Year

1.	PROGRAM AUTHORIZED		
	AF Requirements Action Directive	C-	Jul 71
	DSD Directs TOA/DME System	C-	Oct 71
2.	NEW START APPROVED		
	Area Coordination Paper #4	C-	Mar 72
	TAF ROC Released	C-	1 May 74
	DSARC I.	C-	7 Nov 74
3.	PROGRAM STRATEGY ESTABLISHED		
	ALSS Demonstration in Europe	C-	Mar 75
	PLSS Two-Phase Program	C-	Apr 75
4.	REQUEST FOR PROPOSALS RELEASED		
	Phase I RFP Released	C-	4 Aug 75
	Award of Two Contracts	C-	Mar 76
	Phase II RFP Released	C-	21 Jul 76
5.	DEVELOP CONTRACTORS PROPOSALS		
	Receive FSD Proposals	C-	7 Sep 76
	DSARC IIA	C-	26 Jul 77
6.	SOURCE SELECTION		
	DSARC Approval DCP #129	C-	23 Sep 77
7.	CONTRACT AWARDED		
	FSD Contract Award	C-	30 Sep 77
8.	FULL SCALE DEVELOPMENT		
	System Requirements Review	C-	Jan 78
	System Design Review	C-	May 78
	ASD Program Funds Cut	C-	Dec 78
	Funds Capped and Shifted	C-	Mar 79
9.	CONTRACTORS PRELIMINARY DESIGN REVIEW		
	Preliminary Design Review	C-	Oct 79
	TR-1 Selected as ARV	C-	30 Aug 79
	Submit Program Restructure	C-	Jan 80
	Withdrawal of Major System Designation	C-	10 Jun 81
	F-16 Replaces F-4 as VNS	C-	Sep 81
	Program Restart Submitted	C-	Dec 81
	DSARC IIB.		CANCELLED
10.	SYSTEM CRITICAL DESIGN REVIEW		
	System Critical Design Review	C-	Mar 83
11.	CONTRACTOR'S FABRICATION AND ASSEMBLY		
	Rephase Program's Length	C-	Jul 83
	Prototype Hardware Built	C-	Oct 83

PRECISION LOCATION STRIKE SYSTEM
PROJECTED SCHEDULE
1 July 1986

S=Scheduled C=Completed

Underlined Dates Indicate A Change From Previous Year

12.	PROTOTYPE HARDWARE DELIVERED		
	First Flight for System Integration	C-	Dec 83
	Full System Integration Begins	C-	Jul 84
13.	TEST PROGRAM		
	Start Contractor Integrated Testing	C-	Oct 84
	End Contractor Integrated Testing	S-	Jul 86
	Establish Baseline	S-	Jul 86
	Begin DT&E at Sunnyvale	S-	Jul 86
	Move Testing to Nellis	S-	Aug 86
	Begin Combined DT&E/IOT&E Testing	S-	Oct 86
	NATO/USAFE Demonstration		Redefined
	End Combined DT&E/IOT&E Testing	S-	Mar 87
	Start FOT&E Phase I		CANCELLED
14.	PROGRAM DECISION		
	DSARC III.		CANCELLED
	AFSARC IIIA		CANCELLED
	Program Restructure	C-	Apr 86
	Program Decision	S-	Apr 87
	Mothball System	S-	Apr 87
	Limited European Operational Capability . .	S-	Jun 87
	Limited Production Decision		CANCELLED
15.	PRODUCTION START-UP		
	Release Long Lead Monies for Production . .	C-	Oct 84
	Award Production Contract		CANCELLED
	Production Start-Up		
16.	FIRST HARDWARE DELIVERED		
	AFSARC IIIB		CANCELLED
	Full Production Decision		CANCELLED
	First Hardware Delivered		
17.	INITIAL OPERATIONAL CAPABILITY		
	IOC.		CANCELLED
18.	MAXIMUM PRODUCTION RATE ACHIEVED		
	Maximum Production Rate Achieved		
19.	FULLY OPERATIONAL CAPABILITY		
	Fully Operational Capability		CANCELLED
20.	PROGRAM MANAGEMENT RESPONSIBILITY TRANSFER		
	PMRT		CANCELLED
21.	DEPLOYMENT COMPLETE		
	Deployment Complete		CANCELLED

Appendix B: Data Set I

Selected Yearly CSNAS Output Products

Appendix B contains the data set I input data listings and subsequent error listings generated by CSNAS for each individual year of the PLSS projected schedule. Also included is the number of tasks and connections for each file.

Since initial durations input are zero, CSNAS changes any input duration to allocate its available time based on predecessor and successor. These changed durations are listed. Since subsequent years use the same data, only the initial duration change is listed. Any following year has only new duration changes listed.

The last pages of this appendix contain two printer networks generated by CSNAS for 1977 and 1985. The 1977 network is the base year and is a standard printer output using an 80 column option. The 1985 printer uses the standard CSNAS output saved to a disk file and then printed using "SIDEWAYS", a readily available software program.

gray

DATE: 5SEP86, TIME:00:00:00, FILE: NET77.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION	WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK START		100	0	71 1 1A	71 1 1A
11	0/0	AF RQMTS ACTN DIR	AIR STAFF	100	0	71 1 4A	71 716A
21	0/0	DSD DIRECTS TOA/DME SYS	DOD	100	0	71 716A	711015A
31	0/0	AREA COORD PAPER #4	AIR STAFF	100	0	711018A	72 315A
41	0/0	ALSS DEMO IN EUROPE	USAFE	100	0	75 2 3A	75 331A
71	0/0	TAF ROC RELEASED	USAFE 74	100	0	72 316A	74 5 2A
81	0/0	DSARC I	DOD	100	1	7411 1A	7411 7A
91	0/0	PLSS TWO- PHASE PGM	SPO	100	0	75 331A	75 415A
101	0/0	PHASE I RFP RELEASED	SPO	100	0	75 710A	75 8 5A
111	0/0	AWARD OF TWO CONTRACTS	SPO	100	0	76 1 2A	76 316A
121	0/0	PHASE II RFP RELEASED	SPO	100	0	76 721A	76 722A
131	0/0	RECEIVE FSD PROPOSALS	SPO	100	0	76 9 7A	76 9 8A
141	0/0	DSARC IIA	DOD	100	5000	77 725A	77 727A
151	0/0	DSARC APPVL DCP #129	DOD	100	0	77 8 1A	77 926A
161	0/0	FSD CONTRACT AWARD	SPO	100	0	77 930A	77 930A
171	0/0	SYS RQMTS REVIEW	SPO	0	0	78 1 2S	78 2 1S
181	0/0	SYS DESIGN REVIEW	SPO	0	0	78 5 1S	78 531S
241	0/0	PRELIMINARY DESIGN REVW	SPO	0	1	7811 1S	7812 1S
201	0/0	DSARC IIB	DOD	0	5000	79 2 1S	79 228S
271	0/0	SYS CRIT DSGN REV	SPO	0	0	79 9 3S	7910 1S
281	0/0	PROTOTYPE HDWR BUILT	LKHD	0	1	0 0 0	0 0 0
311	0/0	FULL SYSTEM INTGT START	SPO	0	0	0 0 0	0 0 0
321	0/0	START DT&E/IOT&E	SPO	0	0	81 2 2S	81 3 2S
361	0/0	END TESTING PROGRAM	AFOTEC	0	1	0 0 0	82 3 1S
371	0/0	DSARC III	DOD	0	1	82 1 1S	82 2 1S
441	0/0	FULL PRODTN DECISION	USAF	0	1	0 0 0	0 0 0
401	0/0	CONTRACT AWARD	SPO	0	1	0 0 0	0 0 0
411	0/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
471	0/0	MAX PRODTN RATE	LKHD	0	1	0 0 0	0 0 0
421	0/0	FIRST HRDWRE DELIVERED	LKHD	0	1	0 0 0	0 0 0
481	0/0	INITIAL OPS CAPABILITY	USAFE	0	1001	84 6 1S	84 7 2S
491	0/0	FULLY OPS CAPABILITY	USAFE	0	1	84 7 2S	8610 1S
501	0/0	PMRT	AFSC	0	1	0 0 0	0 0 0
511	0/0	DEPLOYMENT COMPLETE	USAF	0	1	0 0 0	0 0 0
531	0/0	NETWORK STOP	-	0	1	8610 7S	861010S

THERE ARE: 35 TASKS AND , 36 CONNECTIONS ON THIS FILE

TASK # 11 TIME CHANGED FROM 0/0 TO 27/4
TASK # 21 TIME CHANGED FROM 0/0 TO 13/0
TASK # 31 TIME CHANGED FROM 0/0 TO 21/2
TASK # 41 TIME CHANGED FROM 0/0 TO 8/0
TASK # 71 TIME CHANGED FROM 0/0 TO 111/0
TASK # 81 TIME CHANGED FROM 0/0 TO 0/4
TASK # 91 TIME CHANGED FROM 0/0 TO 2/1
TASK # 101 TIME CHANGED FROM 0/0 TO 3/3
TASK # 111 TIME CHANGED FROM 0/0 TO 10/2
TASK # 121 TIME CHANGED FROM 0/0 TO 0/1
TASK # 131 TIME CHANGED FROM 0/0 TO 0/1
TASK # 141 TIME CHANGED FROM 0/0 TO 0/2
TASK # 151 TIME CHANGED FROM 0/0 TO 8/0
TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

S COMPLT FOR TASK# 361 CHGD FROM 82 3 1 TO 82 2 1 DUE TO TASK# 371

gray

DATE: 5SEP86, TIME:00:00:00, FILE: NET78.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION	WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK START		100	0	71 1 1A	71 1 1A
11	0/0	AF RQMTS ACTN DIR	AIR STAFF	100	0	71 1 4A	71 716A
21	0/0	DSD DIRECTS TOA/DME SYS	DOD	100	0	71 716A	711015A
31	0/0	AREA COORD PAPER ##4	AIR STAFF	100	0	711018A	72 315A
41	0/0	ALSS DEMO IN EUROPE	USAFE	100	0	75 2 3A	75 331A
71	0/0	TAF ROC RELEASED	USAFE 74	100	0	72 316A	74 5 2A
81	0/0	DSARC I	DOD	100	1	7411 1A	7411 7A
91	0/0	PLSS TWO- PHASE PGM	SPO	100	0	75 331A	75 415A
101	0/0	PHASE I RFP RELEASED	SPO	100	0	75 710A	75 8 5A
111	0/0	AWARD OF TWO CONTRACTS	SPO	100	0	76 1 2A	76 316A
121	0/0	PHASE II RFP RELEASED	SPO	100	0	76 721A	76 722A
131	0/0	RECEIVE FSD PROPOSALS	SPO	100	0	76 9 7A	76 9 8A
141	0/0	DSARC IIA	DOD	100	5000	77 725A	77 727A
151	0/0	DSARC APPVL DCP ##129	DOD	100	0	77 8 1A	77 926A
161	0/0	FSD CONTRACT AWARD	SPO	100	0	77 930A	77 930A
171	0/0	SYS RQMTS REVIEW	SPO	100	0	78 1 2A	78 131A
181	0/0	SYS DESIGN REVIEW	SPO	100	0	78 5 1A	78 531A
241	0/0	PRELIMINARY DESIGN REVW	SPO	0	1	7811 1S	7812 1S
201	0/0	DSARC IIB	DOD	0	5000	79 2 1S	79 228S
271	0/0	SYS CRIT DSGN REV	SPO	0	0	79 9 3S	7910 1S
281	0/0	PROTOTYPE HDWR BUILT	LKHD	0	1	0 0 0	0 0 0
311	0/0	FULL SYSTEM INTGT START	SPO	0	0	0 0 0	0 0 0
321	0/0	START DT&E/IOT&E	SPO	0	0	81 2 2S	81 3 2S
361	0/0	END TESTING PROGRAM	AFOTEC	0	1	0 0 C	82 3 1S
371	0/0	DSARC III	DOD	0	1	82 1 1S	82 2 1S
441	0/0	FULL PRODTN DECISION	USAF	0	1	0 0 0	0 0 0
401	0/0	CONTRACT AWARD	SPO	0	1	0 0 0	0 0 0
411	0/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
471	0/0	MAX PRODTN RATE	LKHD	0	1	0 0 0	0 0 0
421	0/0	FIRST HRDWRE DELIVERED	LKHD	0	1	0 0 0	0 0 0
481	0/0	INITIAL OPS CAPABILITY	USAFE	0	1001	84 6 1S	84 7 2S
491	0/0	FULLY OPS CAPABILITY	USAFE	0	1	84 7 2S	8610 1S
501	0/0	PMRT	AFSC	0	1	0 0 0	0 0 0
511	0/0	DEPLOYMENT COMPLETE	USAF	0	1	0 0 0	0 0 0
531	0/0	NETWORK STOP	-	0	1	8610 7S	861010S

THERE ARE: 35 TASKS AND , 36 CONNECTIONS ON THIS FILE

TASK # 171 TIME CHANGED FROM 0/0 TO 4/1
TASK # 181 TIME CHANGED FROM 0/0 TO 4/2
TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

S COMPLT FOR TASK## 361 CHGD FROM 82 3 1 TO 82 2 1 DUE TO TASK## 371

gray

DATE: 5SEP86, TIME:00:00:00, FILE: NET79.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION		WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK	START		100	0	71 1 1A	71 1 1A
11	0/0	AF RQMTS	ACTN DIR	AIR STAFF	100	0	71 1 4A	71 716A
21	0/0	DSD DIRECTS	TOA/DME SYS	DOD	100	0	71 716A	711015A
31	0/0	AREA COORD	PAPER #4	AIR STAFF	100	0	711018A	72 315A
41	0/0	ALSS DEMO IN EUROPE		USAFE	100	0	75 2 3A	75 331A
61	0/0	TR-1	SELECTED	DOD	100	0	78 7 3A	79 831A
71	0/0	TAF ROC	RELEASED	USAFE 74	100	0	72 316A	74 5 2A
81	0/0	DSARC I		DOD	100	1	7411 1A	7411 7A
91	0/0	PLSS TWO-	PHASE PGM	SPO	100	0	75 331A	75 415A
101	0/0	PHASE I RFP	RELEASED	SPO	100	0	75 710A	75 8 5A
111	0/0	AWARD OF TWO	CONTRACTS	SPO	100	0	76 1 2A	76 316A
121	0/0	PHASE II RFP	RELEASED	SPO	100	0	76 721A	76 722A
131	0/0	RECEIVE FSD	PROPOSALS	SPO	100	0	76 9 7A	76 9 8A
141	0/0	DSARC IIA		DOD	100	5000	77 725A	77 727A
151	0/0	DSARC APPVL	DCP #129	DOD	100	0	77 8 1A	77 926A
161	0/0	FSD CONTRACT	AWARD	SPO	100	0	77 930A	77 930A
171	0/0	SYS RQMTS	REVIEW	SPO	100	0	78 1 2A	78 131A
181	0/0	SYS DESIGN	REVIEW	SPO	100	0	78 5 1A	78 531A
191	0/0	ASD PROGRAM	FUNDS CUT	DOD	100	1	7812 1A	781229A
201	0/0	DSARC IIB	CANCELLED	DOD	100	5000	79 2 1A	79 2 1A
221	0/0	FUNDS CAPPED	& SHIFTED	DOD	100	1	79 3 1A	79 329A
241	0/0	PRELIMINARY	DESIGN REVW	SPO	0	1	7910 1S	7911 1S
271	0/0	SYS CRIT	DSGN REV	SPO	0	0	7912 3S	80 1 1S
281	0/0	PROTOTYPE	HDWR BUILT	LKHD	0	1	0 0 0	0 0 0
311	0/0	FULL SYSTEM	INTGT START	SPO	0	0	0 0 0	0 0 0
321	0/0	START	DT&E/IOT&E	SPO	0	0	81 2 2S	81 3 2S
361	0/0	END TESTING	PROGRAM	AFOTEC	0	1	0 0 0	82 3 1S
371	0/0	DSARC III		DOD	0	1	82 1 1S	82 2 1S
441	0/0	FULL PRODTN	DECISION	USAF	0	1	0 0 0	0 0 0
401	0/0	CONTRACT	AWARD	SPO	0	1	0 0 0	0 0 0
411	0/0	CONTRACTOR	FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
471	0/0	MAX PRODTN	RATE	LKHD	0	1	0 0 0	0 0 0
421	0/0	FIRST HRDWRE	DELIVERED	LKHD	0	1	0 0 0	0 0 0
481	0/0	INITIAL OPS	CAPABILITY	USAFE	0	1001	84 6 1S	84 7 2S
491	0/0	FULLY OPS	CAPABILITY	USAFE	0	1	84 7 2S	8610 1S
501	0/0	PMRT		AFSC	0	1	0 0 0	0 0 0
511	0/0	DEPLOYMENT	COMPLETE	USAF	0	1	0 0 0	0 0 0
531	0/0	NETWORK	STOP	-	0	1	8610 7S	861010S

THERE ARE: 38 TASKS AND , 42 CONNECTIONS ON THIS FILE

TASK # 191 TIME CHANGED FROM 0/0 TO 4/0
TASK # 221 TIME CHANGED FROM 0/0 TO 4/0
TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

S COMPLT FOR TASK# 361 CHGD FROM 82 3 1 TO 82 2 1 DUE TO TASK# 371

gray

DATE: 5SEP86, TIME:00:00:00, FILE: NET80.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION		WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK	START		100	0	71 1 1A	71 1 1A
11	0/0	AF RQMTS	ACTN DIR	AIR STAFF	100	0	71 1 4A	71 716A
21	0/0	DSD DIRECTS	TOA/DME SYS	DOD	100	0	71 716A	711015A
31	0/0	AREA COORD	PAPER #4	AIR STAFF	100	0	711018A	72 315A
41	0/0	ALSS DEMO IN EUROPE		USAFE	100	0	75 2 3A	75 331A
61	0/0	TR-1	SELECTED	DOD	100	0	78 7 3A	79 831A
71	0/0	TAF ROC	RELEASED	USAFE 74	100	0	72 316A	74 5 2A
81	0/0	DSARC I		DOD	100	1	7411 1A	7411 7A
91	0/0	PLSS TWO-	PHASE PGM	SPO	100	0	75 331A	75 415A
101	0/0	PHASE I RFP	RELEASED	SPO	100	0	75 710A	75 8 5A
111	0/0	AWARD OF TWO CONTRACTS		SPO	100	0	76 1 2A	76 316A
121	0/0	PHASE II RFP	RELEASED	SPO	100	0	76 721A	76 722A
131	0/0	RECEIVE FSD	PROPOSALS	SPO	100	0	76 9 7A	76 9 8A
141	0/0	DSARC IIA		DOD	100	5000	77 725A	77 727A
151	0/0	DSARC APPVL	DCP #129	DOD	100	0	77 8 1A	77 926A
161	0/0	FSD CONTRACT	AWARD	SPO	100	0	77 930A	77 930A
171	0/0	SYS RQMTS	REVIEW	SPO	100	0	78 1 2A	78 131A
181	0/0	SYS DESIGN	REVIEW	SPO	100	0	78 5 1A	78 531A
191	0/0	ASD PROGRAM	FUNDS CUT	DOD	100	1	7812 1A	781229A
201	0/0	DSARC IIB	CANCELLED	DOD	100	5000	79 2 1A	79 2 1A
221	0/0	FUNDS CAPPED	& SHIFTED	DOD	100	1	79 3 1A	79 329A
241	0/0	PRELIMINARY	DESIGN REVW	SPO	100	1	7910 1A	791031A
231	0/0	SUBMIT PGM	RESTRUCTURE	SPO	100	4000	7911 1A	80 116A
271	0/0	SYS CRIT	DSGN REV	SPO	0	0	8112 1S	82 1 1S
281	0/0	PROTOTYPE	HDWR BUILT	LKHD	0	1	0 0 0	0 0 0
311	0/0	FULL SYSTEM	INTGT START	SPO	0	0	0 0 0	0 0 0
321	0/0	START	DT&E/IOT&E	SPO	0	0	83 3 1S	83 4 1S
361	0/0	END TESTING	PROGRAM	AFOTEC	0	1	0 0 0	84 229S
371	0/0	DSARC III		DOD	0	1	84 5 1S	84 531S
441	0/0	FULL PRODTN	DECISION	USAF	0	1	0 0 0	0 0 0
401	0/0	CONTRACT	AWARD	SPO	0	1	0 0 0	0 0 0
411	0/0	CONTRACTOR	FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
471	0/0	MAX PRODTN	RATE	LKHD	0	1	0 0 0	0 0 0
421	0/0	FIRST HRDWRE	DELIVERED	LKHD	0	1	0 0 0	0 0 0
481	0/0	INITIAL OPS	CAPABILITY	USAFE	0	1001	86 9 1S	8610 1S
491	0/0	FULLY OPS	CAPABILITY	USAFE	0	1	8610 1S	8810 3S
501	0/0	PMRT		AFSC	0	1	0 0 0	0 0 0
511	0/0	DEPLOYMENT	COMPLETE	USAF	0	1	0 0 0	8810 4S
531	0/0	NETWORK	STOP	-	0	1	8810 7S	881010S

THERE ARE: 39 TASKS AND , 44 CONNECTIONS ON THIS FILE

TASK # 241 TIME CHANGED FROM 0/0 TO 4/2
TASK # 231 TIME CHANGED FROM 0/0 TO 10/4
TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

gray

DATE: 5SEP86, TIME:00:00:00, FILE: NET81.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION		WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK	START		100	0	71 1 1A	71 1 1A
11	0/0	AF RQMTS	ACTN DIR	AIR STAFF	100	0	71 1 4A	71 716A
21	0/0	DSD DIRECTS	TOA/DME SYS	DOD	100	0	71 716A	711015A
31	0/0	AREA COORD	PAPER #4	AIR STAFF	100	0	711018A	72 315A
41	0/0	ALSS DEMO IN EUROPE		USAFE	100	0	75 2 3A	75 331A
51	0/0	F16 SELECTED OVER F-4		AFSC	100	4000	81 1 2A	81 930A
61	0/0	TR-1	SELECTED	DOD	100	0	78 7 3A	79 831A
71	0/0	TAF ROC	RELEASED	USAFE 74	100	0	72 316A	74 5 2A
81	0/0	DSARC I		DOD	100	1	7411 1A	7411 7A
91	0/0	PLSS TWO-	PHASE PGM	SPO	100	0	75 331A	75 415A
101	0/0	PHASE I RFP	RELEASED	SPO	100	0	75 710A	75 8 5A
111	0/0	AWARD OF TWO CONTRACTS		SPO	100	0	76 1 2A	76 316A
121	0/0	PHASE II RFP	RELEASED	SPO	100	0	76 721A	76 722A
131	0/0	RECEIVE FSD	PROPOSALS	SPO	100	0	76 9 7A	76 9 8A
141	0/0	DSARC IIA		DOD	100	5000	77 725A	77 727A
151	0/0	DSARC APPVL	DCP #129	DOD	100	0	77 8 1A	77 926A
161	0/0	FSD CONTRACT	AWARD	SPO	100	0	77 930A	77 930A
171	0/0	SYS RQMTS	REVIEW	SPO	100	0	78 1 2A	78 131A
181	0/0	SYS DESIGN	REVIEW	SPO	100	0	78 5 1A	78 531A
191	0/0	ASD PROGRAM	FUNDS CUT	DOD	100	1	7812 1A	781229A
201	0/0	DSARC IIB	CANCELLED	DOD	100	5000	79 2 1A	79 2 1A
211	0/0	LONG LEAD $	FOR PRODUCTN	SPO	0	0	0 0 0	8310 3S
221	0/0	FUNDS CAPPED & SHIFTED		DOD	100	1	79 3 1A	79 329A
231	0/0	SUBMIT PGM	RESTRUCTURE	SPO	100	4000	7911 1A	80 116A
241	0/0	PRELIMINARY	DESIGN REVW	SPO	100	1	7910 1A	791031A
251	0/0	WITHDRAWAL	MAJ SYS DES	DOD	100	4000	81 5 1A	81 611A
271	0/0	SYS CRIT	DSGN REV	SPO	0	0	0 0 0	82 1 1S
281	0/0	PROTOTYPE	HDWR BUILT	LKHD	0	1	0 0 0	0 0 0
311	0/0	FULL SYSTEM	INTGT START	SPO	0	0	0 0 0	83 2 1S
321	0/0	START	DT&E/IOT&E	SPO	0	0	0 0 0	8310 3S
361	0/0	END TESTING	PROGRAM	AFOTEC	0	1	0 0 0	8410 1S
351	0/0	NATO/USAFE	DEMONSTRAT	USAFE	0	1	0 0 0	85 3 1S
371	0/0	DSARC III	CANCELLED	DOD	0	1	0 0 0	0 0 0
381	0/0	AFSARC IIIA		USAF	0	5001	0 0 0	8410 2S
391	0/0	LIMITED PROD	DECISION	DOD	0	1	0 0 0	8411 1S
401	0/0	CONTRACT	AWARD	SPO	0	1	0 0 0	0 0 0
411	0/0	CONTRACTOR	FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
431	0/0	AFSARC IIIB		USAF	0	5001	0 0 0	85 312S
441	0/0	FULL PRODTN	DECISION	USAF	0	1	0 0 0	85 4 1S
451	0/0	CONTRACT	AWARD	SPO	0	1	0 0 0	0 0 0
461	0/0	CONTRACTOR	FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
471	0/0	MAX PRODTN	RATE	LKHD	0	1	0 0 0	0 0 0
421	0/0	FIRST HRDWRE	DELIVERED	LKHD	0	1	0 0 0	0 0 0
481	0/0	INITIAL OPS	CAPABILITY	USAFE	0	1001	86 9 1S	8610 1S
491	0/0	FULLY OPS	CAPABILITY	USAFE	0	1	0 0 0	88 916S
501	0/0	PMRT		AFSC	0	1	0 0 0	0 0 0
511	0/0	DEPLOYMENT	COMPLETE	USAF	0	1	0 0 0	8810 3S
531	0/0	NETWORK	STOP	-	0	1	88101CS	881012S

THERE ARE: 48 TASKS AND , 56 CONNECTIONS ON THIS FILE

TASK # 241 TIME CHANGED FROM 0/0 TO 4/2
TASK # 251 TIME CHANGED FROM 0/0 TO 5/4
TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

gray

```
DATE: 5SEP86, TIME:00:00:00, FILE:                         NET82.NET


NETWORK START DATE=71 1 1
 TASK  TIME                                            PCT         USER  USER
 ID # WK/DY DESCRIPTION              WBS/OPR          COMP  GRP  START COMPLT
    1   0/0 NETWORK      START                         100     0 71  1  1A71  1  1A
   11   0/0 AF RQMTS     ACTN DIR     AIR STAFF        100     0 71  1  4A71  716A
   21   0/0 DSD DIRECTS TOA/DME SYS  DOD              100     0 71  716A711015A
   31   0/0 AREA COORD   PAPER #4     AIR STAFF        100     0 711018A72  315A
   41   0/0 ALSS DEMO  IN EUROPE      USAFE            100     0 75  2  3A75  331A
   51   0/0 F16 SELECTED OVER F-4     AFSC             100  4000 81  1  2A81  930A
   61   0/0 TR-1         SELECTED     DOD              100     0 78  7  3A79  831A
   71   0/0 TAF ROC      RELEASED     USAFE 74         100     0 72  316A74  5  2A
   81   0/0 DSARC I                   DOD              100     1 7411  1A7411  7A
   91   0/0 PLSS TWO-    PHASE PGM    SPO              100     0 75  331A75  415A
  101   0/0 PHASE I RFP  RELEASED     SPO              100     0 75  710A75  8  5A
  111   0/0 AWARD OF TWO CONTRACTS    SPO              100     0 76  1  2A76  316A
  121   0/0 PHASE II RFP RELEASED     SPO              100     0 76  721A76  722A
  131   0/0 RECEIVE FSD PROPOSALS     SPO              100     0 76  9  7A76  9  8A
  141   0/0 DSARC IIA                 DOD              100  5000 77  725A77  727A
  151   0/0 DSARC APPVL DCP #129      DOD              100     0 77  8  1A77  926A
  161   0/0 FSD CONTRACT AWARD        SPO              100     0 77  930A77  930A
  171   0/0 SYS RQMTS    REVIEW       SPO              100     0 78  1  2A78  131A
  181   0/0 SYS DESIGN   REVIEW       SPO              100     0 78  5  1A78  531A
  191   0/0 ASD PROGRAM FUNDS CUT     DOD              100     1 7812  1A781229A
  201   0/0 DSARC IIB    CANCELLED    DOD              100  5000 79  2  1A79  2  1A
  211   0/0 LONG LEAD $ FOR PRODUCTNSPO                  0     0  0 0 0 841031S
  221   0/0 FUNDS CAPPED & SHIFTED    DOD              100     1 79  3  1A79  329A
  231   0/0 SUBMIT PGM   RESTRUCTURE  SPO              100  4000 7911  1A80  116A
  241   0/0 PRELIMINARY DESIGN REVW   SPO              100     1 7910  1A791031A
  251   0/0 WITHDRAWAL   MAJ SYS DES  DOD              100  4000 81  5  1A81  611A
  261   0/0 PGM RESTART  SUBMITTED    SPO              100  4000 8110  1A811231A
  271   0/0 SYS CRIT     DSGN REV     SPO                0     0  0 0 0 83  331S
  281   0/0 PROTOTYPE    HDWR BUILT   LKHD               0     1  0 0 0  0 0 0
  311   0/0 FULL SYSTEM  INTGT START  SPO                0     0  0 0 0 84  2  1S
  321   0/0 START        DT&E/IOT&E   SPO                0     0  0 0 0 84  9  3S
  361   0/0 END TESTING  PROGRAM      AFOTEC             0     1  0 0 0 85  8  1S
  351   0/0 NATO/USAFE   DEMONSTRAT   USAFE              0     1  0 0 0 85  7  1S
  371   0/0 DSARC III    CANCELLED    DOD                0     1  0 0 0  0 0 0
  381   0/0 AFSARC IIIA               USAF               0  5001  0 0 0 841016S
  391   0/0 LIMITED PROD DECISION     DOD                0     1  0 0 0 8411  1S
  401   0/0 CONTRACT     AWARD        SPO                0     1  0 0 0  0 0 0
  411   0/0 CONTRACTOR   FAB & ASSBY  LKHD               0     1  0 0 0  0 0 0
  431   0/0 AFSARC IIIB               USAF               0  5001  0 0 0 85  312S
  441   0/0 FULL PRODTN  DECISION     USAF               0     1  0 0 0 85  4  1S
  451   0/0 CONTRACT     AWARD        SPO                0     1  0 0 0  0 0 0
  461   0/0 CONTRACTOR   FAB & ASSBY  LKHD               0     1  0 0 0  0 0 0
  471   0/0 MAX PRODTN   RATE         LKHD               0     1  0 0 0  0 0 0
  421   0/0 FIRST HRDWRE DELIVERED    LKHD               0     1  0 0 0 85  5  1S
  481   0/0 INITIAL OPS CAPABILITY    USAFE              0  1001 86  9  1S8610  1S
  491   0/0 FULLY OPS    CAPABILITY   USAFE              0     1  0 0 0 88  916S
  501   0/0 PMRT                      AFSC               0     1  0 0 0  0 0 0
  511   0/0 DEPLOYMENT   COMPLETE     USAF               0     1  0 0 0 8810  3S
  531   0/0 NETWORK      STOP         -                  0     1 881010S881012S

          THERE ARE: 49 TASKS AND , 57 CONNECTIONS ON THIS FILE

                 TASK #  261 TIME CHANGED FROM  0/0 TO  13/0
                 TASK #    1 HAS NO PREDECESSORS
                 TASK #  531 HAS NO SUCCESSORS

  S COMPLT FOR TASK#  211 CHGD FROM 841031 TO 841016 DUE TO TASK#  371
```

gray

DATE: 5SEP86, TIME:00:00:00, FILE: NET83.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION	WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK START		100	0	71 1 1A	71 1 1A
11	0/0	AF RGMTS ACTN DIR	AIR STAFF	100	0	71 1 4A	71 716A
21	0/0	DSD DIRECTS TOA/DME SYS	DOD	100	0	71 716A	711015A
31	0/0	AREA COORD PAPER #4	AIR STAFF	100	0	711018A	72 315A
41	0/0	ALSS DEMO IN EUROPE	USAFE	100	0	75 2 3A	75 331A
51	0/0	F16 SELECTED OVER F-4	AFSC	100	4000	81 1 2A	81 930A
61	0/0	TR-1 SELECTED	DOD	100	0	78 7 3A	79 831A
71	0/0	TAF ROC RELEASED	USAFE 74	100	0	72 316A	74 5 2A
81	0/0	DSARC I	DOD	100	1	7411 1A	7411 7A
91	0/0	PLSS TWO- PHASE PGM	SPO	100	0	75 331A	75 415A
101	0/0	PHASE I RFP RELEASED	SPO	100	0	75 710A	75 8 5A
111	0/0	AWARD OF TWO CONTRACTS	SPO	100	0	76 1 2A	76 316A
121	0/0	PHASE II RFP RELEASED	SPO	100	0	76 721A	76 722A
131	0/0	RECEIVE FSD PROPOSALS	SPO	100	0	76 9 7A	76 9 8A
141	0/0	DSARC IIA	DOD	100	5000	77 725A	77 727A
151	0/0	DSARC APPVL DCP #129	DOD	100	0	77 8 1A	77 926A
161	0/0	FSD CONTRACT AWAPD	SPO	100	0	77 930A	77 930A
171	0/0	SYS RGMTS REVIEW	SPO	100	0	78 1 2A	78 131A
181	0/0	SYS DESIGN REVIEW	SPO	100	0	78 5 1A	78 531A
191	0/0	ASD PROGRAM FUNDS CUT	DOD	100	1	7812 1A	781229A
201	0/0	DSARC IIB CANCELLED	DOD	100	5000	79 2 1A	79 2 1A
211	0/0	LONG LEAD $ FOR PRODUCTN	SPO	0	0	0 0 0	8411 1S
221	0/0	FUNDS CAPPED & SHIFTED	DOD	100	1	79 3 1A	79 329A
231	0/0	SUBMIT PGM RESTRUCTURE	SPO	100	4000	7911 1A	80 116A
241	0/0	PRELIMINARY DESIGN REVW	SPO	100	1	7910 1A	791031A
251	0/0	WITHDRAWAL MAJ SYS DES	DOD	100	4000	81 5 1A	81 611A
261	0/0	PGM RESTART SUBMITTED	SPO	100	4000	8110 1A	811231A
271	0/0	SYS CRIT DSGN REV	SPO	100	0	83 3 1A	83 331A
281	0/0	PROTOTYPE HDWR BUILT	LKHD	100	1	83 4 1A	8311 1A
291	0/0	REPHASE PGM LENGTH	SPO	100	4000	83 6 1A	83 715A
311	0/0	FULL SYSTEM INTGT START	SPO	0	0	0 0 0	84 531S
321	0/0	START DT&E/IOT&E	SPO	0	0	0 0 0	8410 2S
361	0/0	END TESTING PROGRAM	AFOTEC	0	1	0 0 0	85 8 1S
351	0/0	NATO/USAFE DEMONSTRAT	USAFE	0	1	0 0 0	85 7 1S
371	0/0	DSARC III CANCELLED	DOD	0	1	0 0 0	0 0 0
381	0/0	AFSARC IIIA	USAF	0	5001	0 0 0	8410 2S
391	0/0	LIMITED PROD DECISION	DOD	0	1	0 0 0	841016S
401	0/0	CONTRACT AWARD	SPO	0	1	0 0 0	8411 1S
411	0/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
431	0/0	AFSARC IIIB	USAF	0	5001	0 0 0	85 312S
441	0/0	FULL PRODTN DECISION	USAF	0	1	0 0 0	85 4 1S
451	0/0	CONTRACT AWARD	SPO	0	1	0 0 0	0 0 0
461	0/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
421	0/0	FIRST HRDWRE DELIVERED	LKHD	0	1	0 0 0	85 5 1S
471	0/0	MAX PRODTN RATE	LKHD	0	1	0 0 0	0 0 0
481	0/0	INITIAL OPS CAPABILITY	USAFE	0	1001	86 9 1S	8610 1S
491	0/0	FULLY OPS CAPABILITY	USAFE	0	1	0 0 0	88 9 2S
501	0/0	PMRT	AFSC	0	1	0 0 0	0 0 0
511	0/0	DEPLOYMENT COMPLETE	USAF	0	1	0 0 0	0 0 0
521	0/0	FOT&E PRGM PHASE I	AFOTEC	0	1	86 228S	0 0 0
531	0/0	NETWORK STOP	-	0	1	0 0 0	881012S

THERE ARE: 51 TASKS AND , 61 CONNECTIONS ON THIS FILE

TASK # 271 TIME CHANGED FROM 0/0 TO 4/2
TASK # 281 TIME CHANGED FROM 0/0 TO 30/2
TASK # 291 TIME CHANGED FROM 0/0 TO 6/2
TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

S COMPLT FOR TASK# 211 CHGD FROM 8411 1 TO 8410 2 DUE TO TASK# 371

gray

DATE: 5SEP86, TIME:00:00:00, FILE: NET84.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION	WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK START		100	0	71 1 1A	71 1 1A
11	0/0	AF RQMTS ACTN DIR	AIR STAFF	100	0	71 1 4A	71 716A
21	0/0	DSD DIRECTS TOA/DME SYS	DOD	100	0	71 716A	711015A
31	0/0	AREA COORD PAPER #4	AIR STAFF	100	0	711018A	72 315A
41	0/0	ALSS DEMO IN EUROPE	USAFE	100	0	75 2 3A	75 331A
51	0/0	F16 SELECTED OVER F-4	AFSC	100	4000	81 1 2A	81 930A
61	0/0	TR-1 SELECTED	DOD	100	0	78 7 3A	79 831A
71	0/0	TAF ROC RELEASED	USAFE 74	100	0	72 316A	74 5 2A
81	0/0	DSARC I	DOD	100	1	7411 1A	7411 7A
91	0/0	PLSS TWO- PHASE PGM	SPO	100	0	75 331A	75 415A
101	0/0	PHASE I RFP RELEASED	SPO	100	0	75 710A	75 8 5A
111	0/0	AWARD OF TWO CONTRACTS	SPO	100	0	76 1 2A	76 316A
121	0/0	PHASE II RFP RELEASED	SPO	100	0	76 721A	76 722A
131	0/0	RECEIVE FSD PROPOSALS	SPO	100	0	76 9 7A	76 9 8A
141	0/0	DSARC IIA	DOD	100	5000	77 725A	77 727A
151	0/0	DSARC APPVL DCP #129	DOD	100	0	77 8 1A	77 926A
161	0/0	FSD CONTRACT AWARD	SPO	100	0	77 930A	77 930A
171	0/0	SYS RQMTS REVIEW	SPO	100	0	78 1 2A	78 131A
181	0/0	SYS DESIGN REVIEW	SPO	100	0	78 5 1A	78 531A
191	0/0	ASD PROGRAM FUNDS CUT	DOD	100	1	7812 1A	781229A
201	0/0	DSARC IIB CANCELLED	DOD	100	5000	79 2 1A	79 2 1A
211	0/0	LONG LEAD $ FOR PRODUCTNSPO		100	0	8410 1A	841031A
221	0/0	FUNDS CAPPED & SHIFTED	DOD	100	1	79 3 1A	79 329A
231	0/0	SUBMIT PGM RESTRUCTURE	SPO	100	4000	7911 1A	80 116A
241	0/0	PRELIMINARY DESIGN REVW	SPO	100	1	7910 1A	791031A
251	0/0	WITHDRAWAL MAJ SYS DES	DOD	100	4000	81 5 1A	81 611A
261	0/0	PGM RESTART SUBMITTED	SPO	100	4000	8110 1A	811231A
271	0/0	SYS CRIT DSGN REV	SPO	100	0	83 3 1A	83 331A
281	0/0	PROTOTYPE HDWR BUILT	LKHD	100	1	83 4 1A	8311 1A
291	0/0	REPHASE PGM LENGTH	SPO	100	4000	83 6 1A	83 715A
301	0/0	1ST FLT FOR SYS INTEGN	SPO	100	0	8312 1A	831230A
311	0/0	FULL SYSTEM INTGT START	SPO	100	0	84 1 2A	84 731A
321	0/0	START DT&E/IOT&E	SPO	0	0	8410 1A	8411 1S
361	0/0	END TESTING PROGRAM	AFOTEC	0	1	0 0 0	86 2 3S
351	0/0	NATO/USAFE DEMONSTRAT	USAFE	0	1	0 0 0	85 7 1S
371	0/0	DSARC III CANCELLED	DOD	0	1	0 0 0	0 0 0
381	0/0	AFSARC IIIA	USAF	0	5001	85 1 2S	85 2 1S
391	0/0	LIMITED PROD DECISION	DOD	0	1	0 0 0	85 2 5S
401	0/0	CONTRACT AWARD	SPO	0	1	85 3 1S	85 4 1S
411	0/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
431	0/0	AFSARC IIIB	USAF	0	5001	0 0 0	85 816S
441	0/0	FULL PRODTN DECISION	USAF	0	1	85 816S	85 9 2S
451	0/0	CONTRACT AWARD	SPO	0	1	0 0 0	0 0 0
461	0/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
421	0/0	FIRST HRDWRE DELIVERED	LKHD	0	1	86 2 3S	86 3 3S
471	0/0	MAX PRODTN RATE	LKHD	0	1	0 0 0	0 0 0
481	0/0	INITIAL OPS CAPABILITY	USAFE	0	1001	0 0 0	87 3 2S
491	0/0	FULLY OPS CAPABILITY	USAFE	0	1	87 3 2S	89 3 1S
501	0/0	PMRT	AFSC	0	1	0 0 0	89 328S
511	0/0	DEPLOYMENT COMPLETE	USAF	0	1	89 3 1S	89 4 3S
521	0/0	FOT&E PRGM PHASE I	AFOTEC	0	1	86 228S	0 0 0
531	0/0	NETWORK STOP	-	0	1	89 410S	89 412S

THERE ARE: 52 TASKS AND , 62 CONNECTIONS ON THIS FILE

TASK # 301 TIME CHANGED FROM 0/0 TO 4/1
TASK # 311 TIME CHANGED FROM 0/0 TO 30/1
TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

GRAY

DATE: 6SEP86, TIME:00:00:00, FILE: NET85.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION	WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK START		100	0	71 1 1A	71 1 1A
11	0/0	AF RQMTS ACTN DIR	AIR STAFF	100	0	71 1 4A	71 716A
21	0/0	DSD DIRECTS TOA/DME SYS	DOD	100	0	71 716A	711015A
31	0/0	AREA COORD PAPER #4	AIR STAFF	100	0	711018A	72 315A
41	0/0	ALSS DEMO IN EUROPE	USAFE	100	0	75 2 3A	75 331A
51	0/0	F16 SELECTED OVER F-4	AFSC	100	4000	81 1 2A	81 930A
61	0/0	TR-1 SELECTED	DOD	100	0	78 7 3A	79 831A
71	0/0	TAF ROC RELEASED	USAFE 74	100	0	72 316A	74 5 2A
81	0/0	DSARC I	DOD	100	1	7411 1A	7411 7A
91	0/0	PLSS TWO- PHASE PGM	SPO	100	0	75 331A	75 415A
101	0/0	PHASE I RFP RELEASED	SPO	100	0	75 710A	75 8 5A
111	0/0	AWARD OF TWO CONTRACTS	SPO	100	0	76 1 2A	76 316A
121	0/0	PHASE II RFP RELEASED	SPO	100	0	76 721A	76 722A
131	0/0	RECEIVE FSD PROPOSALS	SPO	100	0	76 9 7A	76 9 8A
141	0/0	DSARC IIA	DOD	100	5000	77 725A	77 727A
151	0/0	DSARC APPVL DCP #129	DOD	100	0	77 8 1A	77 926A
161	0/0	FSD CONTRACT AWARD	SPO	100	0	77 930A	77 930A
171	0/0	SYS RQMTS REVIEW	SPO	100	0	78 1 2A	78 131A
181	0/0	SYS DESIGN REVIEW	SPO	100	0	78 5 1A	78 531A
191	0/0	ASD PROGRAM FUNDS CUT	DOD	100	1	7812 1A	781229A
201	0/0	DSARC IIB CANCELLED	DOD	100	5000	79 2 1A	79 2 1A
211	0/0	LONG LEAD $ FOR PRODUCTN	SPO	100	0	8410 1A	841031A
221	0/0	FUNDS CAPPED & SHIFTED	DOD	100	1	79 3 1A	79 329A
231	0/0	SUBMIT PGM RESTRUCTURE	SPO	100	4000	7911 1A	80 116A
241	0/0	PRELIMINARY DESIGN REVW	SPO	100	1	7910 1A	791031A
251	0/0	WITHDRAWAL MAJ SYS DES	DOD	100	4000	81 5 1A	81 611A
261	0/0	PGM RESTART SUBMITTED	SPO	100	4000	8110 1A	811231A
271	0/0	SYS CRIT DSGN REV	SPO	100	0	83 3 1A	83 331A
281	0/0	PROTOTYPE HDWR BUILT	LKHD	100	1	83 4 1A	8311 1A
291	0/0	REPHASE PGM LENGTH	SPO	100	4000	83 6 1A	83 715A
301	0/0	1ST FLT FOR SYS INTEGN	SPO	100	0	8312 1A	831230A
311	0/0	FULL SYSTEM INTGT START	SPO	100	0	84 1 2A	84 731A
321	0/0	CNTR INTEGD TSTNG BEGIN	SPO	100	0	841015A	8411 1A
331	0/0	END CNTR INTEG TEST	LKHD	0	1	0 0 0	851031S
341	0/0	START DT&E/IOT&E	SPO	0	0	0 0 0	851217S
361	0/0	END TESTING PROGRAM	AFOTEC	0	1	0 0 0	86 4 1S
351	0/0	NATO/USAFE DEMONSTRAT	USAFE	0	1	0 0 0	86 130S
371	0/0	DSARC III CANCELLED	DOD	0	1	0 0 0	0 0 0
381	0/0	AFSARC IIIA	USAF	0	5001	86 4 1S	86 5 1S
391	0/0	LIMITED PROD DECISION	DOD	0	1	86 6 2S	86 6 2S
401	0/0	CONTRACT AWARD	SPO	0	1	86 6 2S	86 7 1S
411	0/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
431	0/0	AFSARC IIIB	USAF	0	5001	86 8 1S	86 818S
441	0/0	FULL PRODTN DECISION	USAF	0	1	86 815S	86 9 1S
451	0/0	CONTRACT AWARD	SPO	0	1	0 0 0	0 0 0
461	0/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
421	0/0	FIRST HRDWRE DELIVERED	LKHD	0	1	8612 1S	87 1 1S
471	0/0	MAX PRODTN RATE	LKHD	0	1	0 0 0	0 0 0
481	0/0	INITIAL OPS CAPABILITY	USAFE	0	1001	87 2 2S	87 3 2S
491	0/0	FULLY OPS CAPABILITY	USAFE	0	1	87 3 2S	89 3 1S
501	0/0	PMRT	AFSC	0	1	0 0 0	89 328S
511	0/0	DEPLOYMENT COMPLETE	USAF	0	1	89 3 1S	89 4 3S
521	0/0	FOT&E PRGM PHASE I	AFOTEC	0	1	86 228S	0 0 0
531	0/0	NETWORK STOP	-	0	1	89 410S	89 5 1S

TASK # 321 TIME CHANGED FROM 0/0 TO 2/3
TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

THERE ARE: 54 TASKS AND , 64 CONNECTIONS ON THIS FILE

GRAY

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DATE: 6SEP86, TIME:00:00:00, FILE:                          NET86.NET


NETWORK START DATE=71 1 1
 TASK  TIME                                        PCT          USER  USER
 ID # WK/DY DESCRIPTION              WBS/OPR       COMP  GRP  START COMPLT
    1   0/0 NETWORK       START                     100     0 71 1 1A71 1 1A
   11   0/0 AF RQMTS      ACTN DIR      AIR STAFF   100     0 71 1 4A71 716A
   21   0/0 DSD DIRECTS TOA/DME SYS DOD             100     0 71 716A711015A
   31   0/0 AREA COORD    PAPER ##4     AIR STAFF   100     0 711018A72 315A
   41   0/0 ALSS DEMO IN EUROPE         USAFE       100     0 75 2 3A75 331A
   51   0/0 F16 SELECTED OVER F-4       AFSC        100  4000 81 1 2A81 930A
   61   0/0 TR-1          SELECTED      DOD         100     0 78 7 3A79 831A
   71   0/0 TAF ROC       RELEASED      USAFE 74    100     0 72 316A74 5 2A
   81   0/0 DSARC I                     DOD         100     1 7411 1A7411 7A
   91   0/0 PLSS TWO-     PHASE PGM     SPO         100     0 75 331A75 415A
  101   0/0 PHASE I RFP RELEASED        SPO         100     0 75 710A75 8 5A
  111   0/0 AWARD OF TWO CONTRACTS      SPO         100     0 76 1 2A76 316A
  121   0/0 PHASE II RFP RELEASED       SPO         100     0 76 721A76 722A
  131   0/0 RECEIVE FSD PROPOSALS       SPO         100     0 76 9 7A76 9 8A
  141   0/0 DSARC IIA                   DOD         100  5000 77 725A77 727A
  151   0/0 DSARC APPVL DCP ##129       DOD         100     0 77 8 1A77 926A
  161   0/0 FSD CONTRACT AWARD          SPO         100     0 77 930A77 930A
  171   0/0 SYS RQMTS     REVIEW        SPO         100     0 78 1 2A78 131A
  181   0/0 SYS DESIGN    REVIEW        SPO         100     0 78 5 1A78 531A
  191   0/0 ASD PROGRAM FUNDS CUT       DOD         100     1 7812 1A781229A
  201   0/0 DSARC IIB     CANCELLED     DOD         100  5000 79 2 1A79 2 1A
  221   0/0 FUNDS CAPPED & SHIFTED      DOD         100     1 79 3 1A79 329A
  231   0/0 SUBMIT PGM    RESTRUCTURE SPO           100  4000 7911 1A80 116A
  241   0/0 PRELIMINARY DESIGN REVW SPO             100     1 7910 1A791031A
  251   0/0 WITHDRAWAL    MAJ SYS DES DOD           100  4000 81 5 1A81 611A
  261   0/0 PGM RESTART   SUBMITTED     SPO         100  4000 8110 1A811231A
  271   0/0 SYS CRIT      DSGN REV      SPO         100     0 83 3 1A83 331A
  281   0/0 PROTOTYPE     HDWR BUILT    LKHD        100     1 83 4 1A8311 1A
  291   0/0 REPHASE PGM LENGTH          SPO         100  4000 8211 1A83 715A
  301   0/0 1ST FLT FOR SYS INTEGN      SPO         100     0 8312 1A831230A
  311   0/0 FULL SYSTEM INTGT START SPO             100     0 84 1 2A84 731A
  321   0/0 CNTR INTEGD TSTNG BEGIN SPO             100     0 8410 1A8411 1A
  211   0/0 LONG LEAD $ FOR PRODUCTNSPO             100     0 8410 1A841031A
  331   0/0 END CNTR      INTEG TEST    LKHD          0     1  0 0 0 86 812S
  435   0/0 PROGRAM       RESTRUCTURE SPO           100     1 86 4 1A86 5 1A
  341   0/0 START         DT&E/IOT&E    SPO           0     0 86 812S8610 2S
  361   0/0 END TESTING PROGRAM         AFOTEC        0     1 87 3 2S87 4 1S
  400   0/0 PROGRAM       DECISION      USAF          0     1 87 4 1S87 5 1S
  500   0/0 MOTHBALL      SYSTEM        AFSC          0     1 87 5 1S87 6 1S
  550   0/0 LTD EUROPE    OPS CAPIBIL USAFE           0     1 87 6 1S87 831S
  531   0/0 NETWORK       STOP          -             0     1 87 929S8710 1S

        THERE ARE: 41 TASKS AND , 51 CONNECTIONS ON THIS FILE

              TASK #  211 TIME CHANGED FROM   0/0 TO   4/2
              TASK #  435 TIME CHANGED FROM   0/0 TO   4/2
              TASK #    1 HAS NO PREDECESSORS
              TASK #  531 HAS NO SUCCESSORS
```

1977 CSNAS Printer Network

The next eleven pages are the CSNAS printer network generated when data set I for initial snapshot year 1977 was executed by CSNAS.

```
 GRAY
1
 01JAN                     04JAN                  16JUL
 71001                     71004                  71197
 000/0                     000/1                  028/0

A01JAN71 01JAN71          A04JAN71 15JUL71        A16JUL71 14OCT71
*****************         *****************       *****************
* 00001      T0/0 *       * 00011     T27/4 *     * 00021     T13/0 *
*NETWORK          *       *AF RQMTS         *     *DSD DIRECTS      *
*START            *->o  -*ACTN DIR          *****TOA/DME SYS      *---
*                 *  |    *AIR STAFF        *     *DOD              *
*                 *  |    *           0.000 *     *           0.000 *
*****************    |    *****************       *****************
 01JAN71 01JAN71A    |     04JAN71 15JUL71A        16JUL71 14OCT71A
                     |
                     |
                     |
                     |
                     o-----------------------------------------
```

```
1
  18OCT                 16MAR                 01NOV                03FEB
  71291                 72076                 74305                75034
  041/1                 062/4                 200/0                213/1

A18OCT71 14MAR72      A16MAR72 01MAY74      A01NOV74 06NOV74
*****************     *****************     *****************
* 00031    T21/2 *    * 00071   T111/0 *    * 00081     T0/4 *
*AREA COORD      *    *TAF ROC         *    *DSARC I         *
*PAPER #4        *---*RELEASED        *---*                *-----------------
*AIR STAFF       *    *USAFE 74        *    *DOD             *
*                *    *          0.000 *    *          0.000 *
*****************     *****************     *****************
 18OCT71 14MAR72A      16MAR72 01MAY74A      01NOV74 06NOV74A

                                                                 A03FEB75 28MAR75
                                                                 *****************
                                                                 * 00041     T8/0 *
                                                                 *ALSS DEMO IN    *
-----------------------------------------------------------------* EUROPE         *
                                                                 *USAFE           *
                                                                 *          0.000 *
                                                                 *****************
                                                                  03FEB75 28MAR75A
```

```
1
   31MAR                 10JUL                 02JAN
   75090                 75191                 76002
   221/1                 235/4                 261/0

  A31MAR75 14APR75     A10JUL75 04AUG75     A02JAN76 15MAR76
  *****************    *****************    *****************
  * 00091    T2/1 *    * 00101     T3/3 *   * 00111    T10/2 *
  *PLSS TWO-      *    *PHASE I RFP     *   *AWARD OF TWO    *
- 0***PHASE PGM   *---*RELEASED        *---* CONTRACTS      *---
  *SPO            *    *SPO             *   *SPO             *
  *               *    *          0.000 *   *          0.000 *
  *****************    *****************    *****************
   31MAR75 14APR75A     10JUL75 04AUG75A     02JAN76 15MAR76A







*>0
```

```
1
 21JUL               07SEP               25JUL
 76203               76251               77206
 289/3               296/2               342/1

A21JUL76 21JUL76    A07SEP76 07SEP76    A25JUL77 26JUL77
*****************   *****************   5***************5
* 00121     TO/1 *  * 00131     TO/1 *  * 00141     TO/2 *
*PHASE II RFP    *  *RECEIVE FSD     *  *DSARC IIA       *
* RELEASED       *---*PROPOSALS      *---*               *---
*SPO             *  *SPO             *  *DOD             *
*                *  *          0.000 *  *          0.000 *
*****************   *****************   5***************5
 21JUL76 21JUL76A    07SEP76 07SEP76A    25JUL77 26JUL77A
```

```
1
 01AUG                 30SEP                 02JAN
 77213                 77273                 78002
 343/1                 352/0                 365/1

A01AUG77 23SEP77     A30SEP77 30SEP77      S02JAN78 02JAN78
*****************    *****************     .................
* 00151     T8/0 *   * 00161     T0/0 *    : 00171     T0/0 :
*DSARC APPVL     *   *FSD CONTRACT    *    :SYS RQMTS       :
*DCP #129        *---* AWARD          *---:REVIEW          :---
*DOD             *   *SPO             *    :SPO             :
*                *   *                *    :    4/2         :
*****************    *****************     .................
 01AUG77 23SEP77A     30SEP77 30SEP77A      01FEB78 01FEB78S
```

```
1
 01MAY              01NOV              01FEB
 78121              78305              79032
 382/1              408/3              421/4

S01MAY78 01MAY78   S01NOV78 01NOV78   S01FEB79 01FEB79
.................  .................  5..............5
: 00181    TO/O :  : 00241    TO/O :  : 00201    TO/O :
:SYS DESIGN     :  :PRELIMINARY    :  :DSARC IIB      :
:REVIEW         :---:DESIGN REVW   :---:              :---
:SPO            :  :SPO            :  :DOD            :
:               :  :   4/2         :  :   3/4         :
.................  .................  5..............5
 31MAY78 31MAY78S   01DEC78 01DEC78S   28FEB79 28FEB79S
```

```
1
 03SEP                03SEP                03SEP
 79246                79246                79246
 452/1                452/1                452/1

S03SEP79 03SEP79      03SEP79 03SEP79      03SEP79 03SEP79

.................    .................    .................
: 00271     TO/0 :   : 00281     TO/0 :   : 00311     TO/0 :
:SYS CRIT        :   :PROTOTYPE       :   :FULL SYSTEM     :
:DSGN REV        :---:HDWR BUILT      :---:INTGT START     :---
:SPO             :   :LKHD            :   :SPO             :
:                :   :  78/0          :   :  78/0          :
.................    .................    .................
 010CT79 010CT79S     02MAR81 02MAR81      02MAR81 02MAR81
```

```
1
 02FEB               02FEB               01JAN
 81033               81033               82001
 526/1               526/1               574/0

S02FEB81 02FEB81     02FEB81 02FEB81     S01JAN82 01JAN82

.................    .................    .................
: 00321     T0/0 :   : 00361     T0/0 :   : 00371     T0/0 :
:START           :   :END TESTING     :   :DSARC III       :
:DT&E/IOT&E      :---:PROGRAM         :---:                :---
:SPO             :   :AFOTEC          :   :DOD             :
:                :   :  52/0          :   :   4/1          :
.................    .................    .................
 02MAR81 02MAR81S     01FEB82 01FEB82E     01FEB82 01FEB82S
```

1

```
 01JAN              01JAN              01JAN
 82001              82001              82001
 574/0              574/0              574/0

 01JAN82 01JAN82    01JAN82 01JAN82    01JAN82 01JAN82
................   ................   ................
: 00441    T0/0 :  : 00401    T0/0 :  : 00411    T0/0 :
:FULL PRODTN    :  :CONTRACT       :  :CONTRACTOR     :
:DECISION       :---:AWARD         :---:FAB & ASSBY   :->o -
:USAF           :  :SPO            :  :LKHD           :
:               :  : 130/1         :  : 130/1         :
................   ................   ................
 02JUL84 02JUL84    02JUL84 02JUL84    02JUL84 02JUL84
```

```
1
 01JAN                  01JUN                     02JUL
 82001                  84153                     84184
 574/0                  700/0                     704/1

 01JAN82 01JAN82       S01JUN84 01JUN84         S02JUL84 02JUL84
.................      1...............1        .................
: 00421     TO/0 :     : 00481     TO/0 :       : 00491     TO/0 :
:FIRST HRDWRE    :     :INITIAL OPS     :       :FULLY OPS       :
: DELIVERED      :---:CAPABILITY      :- o--:CAPABILITY      :---
:LKHD            :     :USAFE           :  |    :USAFE           :
:                :     :   4/1          :  |    : 117/2          :
.................      1...............1   |    .................
 02JUL84 02JUL84        02JUL84 02JUL84S   |     01OCT86 01OCT86S
                                           |
 01JAN82 01JAN82                           |
.................                          |
: 00471     TO/0 :                         |
:MAX PRODTN      :                         |
:RATE            :------------------------>o
:LKHD            :
:                :
.................
 01OCT86 01OCT86
```

```
1
 02JUL                  02JUL                  07OCT
 84184                  84184                  86280
 704/1                  704/1                  822/2

 02JUL84 02JUL84        02JUL84 02JUL84       S07OCT86 07OCT86
.................      .................      .................
: 00501     TO/O :     : 00511     TO/O :     : 00531     TO/O :
:PMRT            :     :DEPLOYMENT      :     :NETWORK         :
:                :----:COMPLETE        :----:STOP            :
:AFSC            :     :USAF            :     :-               :
:                :     : 118/4          :     :   0/3          :
.................      .................      .................
 10OCT86 10OCT86        10OCT86 10OCT86        10OCT86 10OCT86S
```

1985 CSNAS Printer Network

The next nine pages are the CSNAS printer network generated when data set I for the final "classic deployment" snapshot year 1985 was executed by CSNAS. The output was filed on disk and subsquent printing was handled using "SIDEWAYS", a software application package.

```
 GRAY
1
 01JAN              04JAN             16JUL             18OCT             16MAR             01NOV
 71001              71004             71197             71291             72076             74305
 000/0              000/1             028/0             041/1             062/4             200/0

A01JAN71 01JAN71
MMMMMMMMMMMMMMMMM
M 00001     T0/0 M
MNETWORK         M
MSTART           M->
M                M
M                M
MMMMMMMMMMMMMMMMM
 01JAN71 01JAN71A

     A04JAN71 15JUL71   A16JUL71 14OCT71   A18OCT71 14MAR72   A16MAR72 01MAY74   A01NOV74 06NOV74
     MMMMMMMMMMMMMMMMM  MMMMMMMMMMMMMMMMM  MMMMMMMMMMMMMMMMM  MMMMMMMMMMMMMMMMM  MMMMMMMMMMMMMMMMM
     M 00011   T27/4 M  M 00021   T13/0 M  M 00031   T21/2 M  M 00071  T111/0 M  M 00081    T0/4 M
     MAF RQMTS       M  MDSD DIRECTS    M  MAREA COORD     M  MTAF ROC        M  MDSARC I        M
   --MACTN DIR       MMMMMTOA/DME SYS   M---MPAPER 84      M---MRELEASED      M---M               M
     MAIR STAFF      M  MDOD            M  MAIR STAFF      M  MUSAFE 74       M  MDOD            M
     M               M  M         0.000 M  M         0.000 M  M         0.000 M  M         0.000 M
     MMMMMMMMMMMMMMMMM  MMMMMMMMMMMMMMMMM  MMMMMMMMMMMMMMMMM  MMMMMMMMMMMMMMMMM  MMMMMMMMMMMMMMMMM
      04JAN71 15JUL71A   16JUL71 14OCT71A   18OCT71 14MAR72A   16MAR72 01MAY74A   01NOV74 06NOV74A
```

```
1
 03FEB                    31MAR                 10JUL                 02JAN                 21JUL                 07SEP
 75034                    75090                 75191                 76002                 76203                 76251
 213/1                    221/1                 235/4                 261/0                 289/3                 296/2

------------------------------------------------------------------------------------------------------------------------

A03FEB75 28MAR75
MMMMMMMMMMMMMMMM
M 00041    T8/0 M
MALSS DEMO IN   M
M EUROPE        MM>D
MUSAFE          M  |
M               M  |
MMMMMMMMMMMMMMMM   |
 03FEB75 28MAR75A  |
                   |
-------------------|----------------------------------------------------------------------------------------------------
                   |
                   |    A31MAR75 14APR75   A10JUL75 04AUG75   A02JAN76 15MAR76   A21JUL76 21JUL76   A07SEP76 07SEP76
                   |    MMMMMMMMMMMMMMMM   MMMMMMMMMMMMMMMM   MMMMMMMMMMMMMMMM   MMMMMMMMMMMMMMMM   MMMMMMMMMMMMMMMM
                   |    M 00091    T2/1 M  M 00101    T3/3 M  M 00111   T10/2 M  M 00121    T0/1 M  M 00131    T0/1 M
                   |    MPLSS TWO-      M  MPHASE I RFP    M  MAWARD OF TWO   M  MPHASE II RFP   M  MRECEIVE FSD    M
-------------------DMMMPHASE PGM        M---MRELEASED      M---M CONTRACTS    M---M RELEASED     M---MPROPOSALS     M---
                        MSPO            M  MSPO            M  MSPO            M  MSPO            M  MSPO            M
                        M               M  M         0.000 M  M         0.000 M  M         0.000 M  M         0.000 M
                        MMMMMMMMMMMMMMMM   MMMMMMMMMMMMMMMM   MMMMMMMMMMMMMMMM   MMMMMMMMMMMMMMMM   MMMMMMMMMMMMMMMM
                         31MAR75 14APR75A   10JUL75 04AUG75A   02JAN76 15MAR76A   21JUL76 21JUL76A   07SEP76 07SEP76A

------------------------------------------------------------------------------------------------------------------------

------------------------------------------------------------------------------------------------------------------------
```

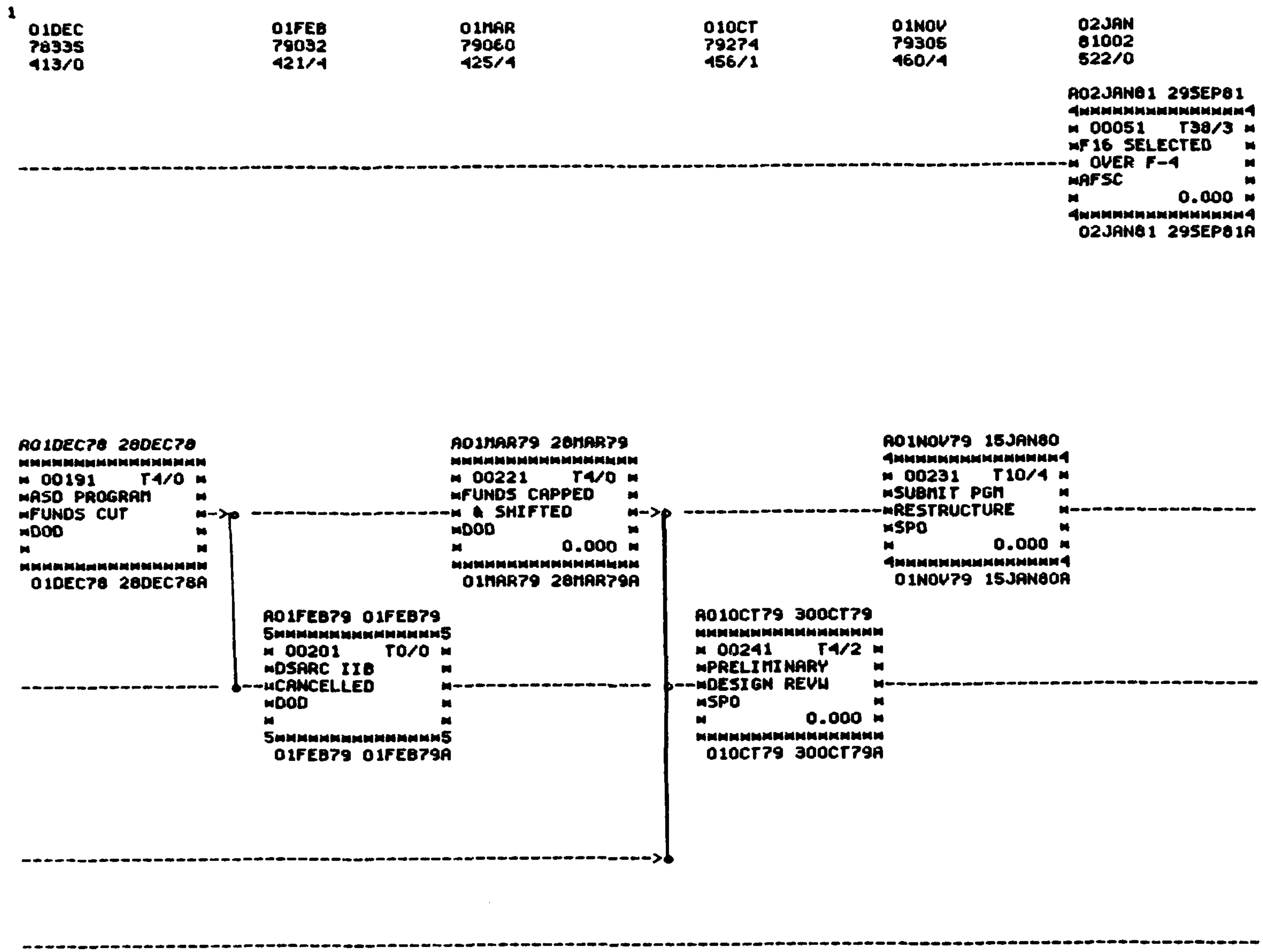
```
1
 25JUL              01AUG              30SEP              02JAN              01MAY            03JUL
 77206              77213              77273              78002              78121            78184
 342/1              343/1              352/0              365/1              382/1            391/1

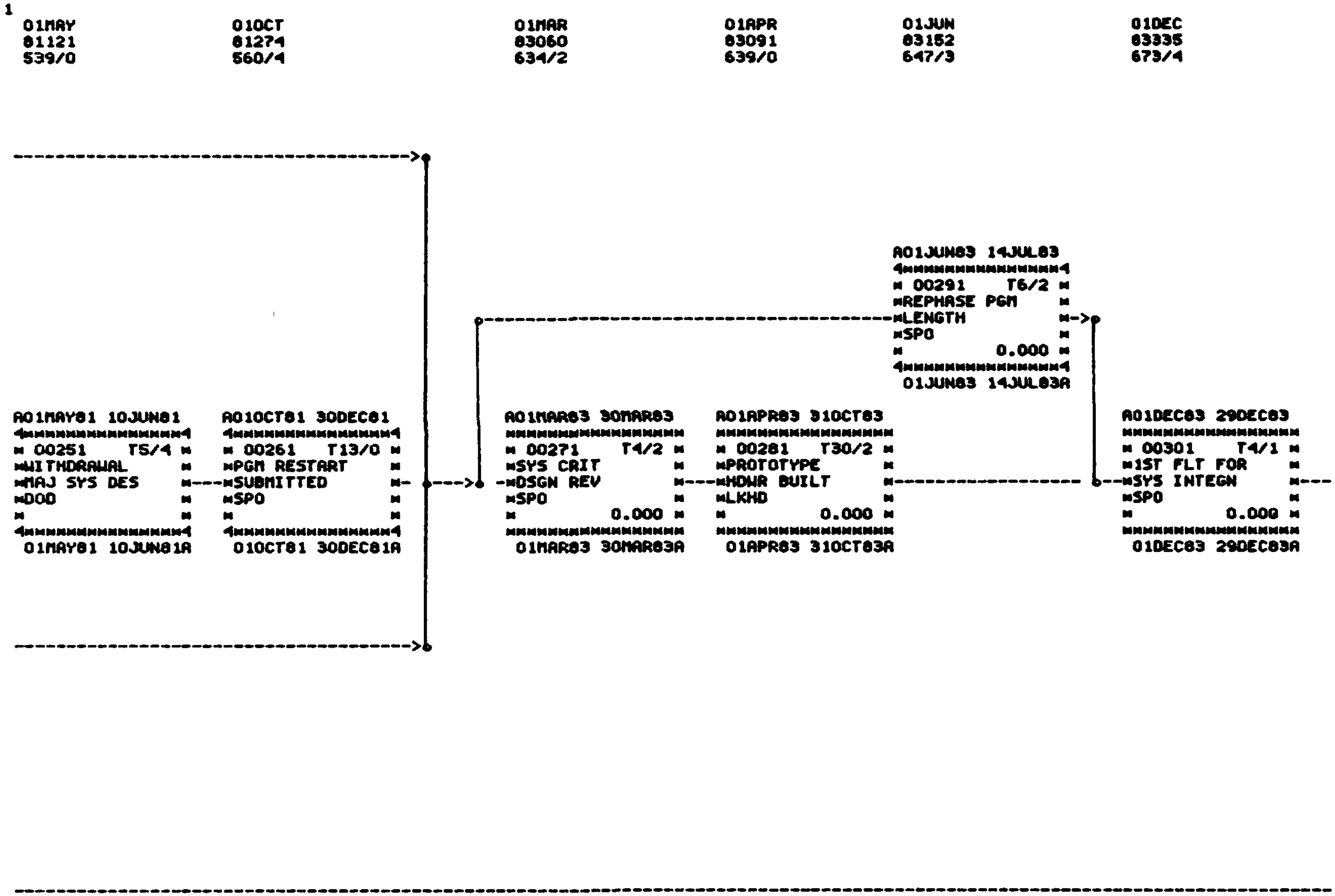
--------------------------------------------------------------------------------------------------------------



--------------------------------------------------------------------------------------------------------------

A25JUL77 26JUL77   A01AUG77 23SEP77   A30SEP77 30SEP77   A02JAN78 30JAN78   A01MAY78 30MAY78
5MMMMMMMMMMMMMMM5  MMMMMMMMMMMMMMMMM  MMMMMMMMMMMMMMMMM  MMMMMMMMMMMMMMMMM  MMMMMMMMMMMMMMMMM
M 00141     T0/2 M  M 00151     T8/0 M  M 00161     T0/0 M  M 00171     T4/1 M  M 00181     T4/2 M
MDSARC IIA       M  MDSARC APPVL     M  MFSD CONTRACT    M  MSYS RQMTS       M  MSYS DESIGN      M
M                M---MDCP #129       M---M AWARD         M---MREVIEW         M---MREVIEW         M----------------
MDOD             M  MDOD             M  MSPO             M  MSPO             M  MSPO             M
M                M  M                M  M                M  M          0.000 M  M          0.000 M
5MMMMMMMMMMMMMMM5  MMMMMMMMMMMMMMMMM  MMMMMMMMMMMMMMMMM  MMMMMMMMMMMMMMMMM  MMMMMMMMMMMMMMMMM
 25JUL77 26JUL77A   01AUG77 23SEP77A   30SEP77 30SEP77A   02JAN78 30JAN78A   01MAY78 30MAY78A
                                                                                            A03JUL78 30AUG79
                                                                                            MMMMMMMMMMMMMMMMM
                                                                                            M 00061    T60/4 M
                                                                                            MTR-1            M
-------------------------------------------------------------------------------------------MSELECTED        M
                                                                                            MDOD             M
                                                                                            M          0.000 M
                                                                                            MMMMMMMMMMMMMMMMM
                                                                                             03JUL78 30AUG79A
--------------------------------------------------------------------------------------------------------------
```


1
01DEC
78335
413/0
01FEB
79032
421/4
01MAR
79060
425/4
01OCT
79274
456/1
01NOV
79306
460/4
02JAN
81002
522/0
A02JAN81 29SEP81
00051 T38/3
F16 SELECTED
OVER F-4
AFSC
0.000
02JAN81 29SEP81A
A01DEC78 28DEC78
00191 T4/0
ASD PROGRAM
FUNDS CUT
DOD
01DEC78 28DEC78A
A01MAR79 28MAR79
00221 T4/0
FUNDS CAPPED
& SHIFTED
DOD
0.000
01MAR79 28MAR79A
A01NOV79 15JAN80
00231 T10/4
SUBMIT PGM
RESTRUCTURE
SPO
0.000
01NOV79 15JAN80A
A01FEB79 01FEB79
00201 T0/0
DSARC IIB
CANCELLED
DOD
01FEB79 01FEB79A
A01OCT79 30OCT79
00241 T4/2
PRELIMINARY
DESIGN REVW
SPO
0.000
01OCT79 30OCT79A


1
01MAY 81121 539/0
01OCT 81274 560/4
01MAR 83060 634/2
01APR 83091 639/0
01JUN 83152 647/3
01DEC 83335 673/4
A01MAY81 10JUN81
00251 T5/4
WITHDRAWAL
MAJ SYS DES
DOD
01MAY81 10JUN81A
A01OCT81 30DEC81
00261 T13/0
PGM RESTART
SUBMITTED
SPO
01OCT81 30DEC81A
A01MAR83 30MAR83
00271 T4/2
SYS CRIT
DSGN REV
SPO
0.000
01MAR83 30MAR83A
A01APR83 31OCT83
00281 T30/2
PROTOTYPE
HDWR BUILT
LKHD
0.000
01APR83 31OCT83A
A01JUN83 14JUL83
00291 T6/2
REPHASE PGM
LENGTH
SPO
0.000
01JUN83 14JUL83A
A01DEC83 29DEC83
00301 T4/1
1ST FLT FOR
SYS INTEGN
SPO
0.000
01DEC83 29DEC83A

```
1
 02JAN          01OCT          15OCT           01NOV           31OCT            12DEC
 84002          84275          84289           84306           85304            85346
 678/1          717/1          719/1           721/4           773/4            779/4


A02JAN84 30JUL84             A15OCT84 31OCT84  01NOV84 30OCT85  31OCT85 11DEC85   12DEC85 05FEB86
****************             ****************  ****************  ****************  ****************
* 00311    T30/1 *           * 00321    T2/3 * * 00331   T52/0 * * 00341    T6/0 * * 00351    T8/0 *
*FULL SYSTEM     *           *CNTR INTEGD    * *END CNTR       * *START          * *NATO/USAFE     *
*INTGT START     *-----------*TSTNG BEGIN    ***INTEG TEST     ***DT&E/IOT&E     **>**DEMONSTRAT     ***
*SPO             *           *SPO            * *LKHD           * *SPO            * *USAFE          *
*                *           *         0.000 * * -10/3  -0.203 * * -10/3  -1.766 * * -10/3  -1.325 *
****************             ****************  ****************  ****************  ****************
 02JAN84 30JUL84A             15OCT84 31OCT84A  20AUG84 16AUG85E  19AUG85 27SEP85E  30SEP85 22NOV85E

                                                                                    12DEC85 09JAN86
                                                                                    ****************
                                                                                    * 00361    T4/1 *
                                                                                    *END TESTING    *
                                                                                 ****PROGRAM        **>
                                                                                    *AFOTEC         *
                                                                                    *  -6/4  -1.619 *
                                                                                    ****************
                                                                                    25OCT85 22NOV85E

                  A01OCT84 30OCT84
                  ****************
                  * 00211    T4/2 *
                  *LONG LEAD $    *
------------------*FOR PRODUCTN   *-------------------------------------------------------------->
                  *SPO            *
                  *               *
                  ****************
                   01OCT84 30OCT84A
```

```
1
 06FEB            01APR            02JUN            16JUN            14JUL            12JAN
 86037            86091            86153            86167            86195            87012
 787/4            795/2            804/1            806/1            810/1            836/1




 06FEB86 06FEB86   S01APR86 21APR86   S02JUN86 13JUN86   E16JUN86 11JUL86    14JUL86 09JAN87   E12JAN87 30JAN87
ĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦ  5ĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦ5  ĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦ  ĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦ  ĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦ  5ĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦ5
Ħ 00371    T0/0 Ħ  Ħ 00381    T3/0 Ħ  Ħ 00391    T2/0 Ħ  Ħ 00401    T4/0 Ħ  Ħ 00411   T26/0 Ħ  Ħ 00431    T3/0 Ħ
ĦDSARC III      Ħ  ĦAFSARC IIIA    Ħ  ĦLIMITED PROD   Ħ  ĦCONTRACT       Ħ  ĦCONTRACTOR     Ħ  ĦAFSARC IIIB    Ħ
ĦCANCELLED      ĦĦĦĦĦ              ĦĦĦĦĦ DECISION     ĦĦĦĦĦAWARD          ĦĦĦĦĦFAB & ASSBY    ĦĦĦĦĦ              ĦĦĦĦ
ĦDOD            Ħ  ĦUSAF           Ħ  ĦDOD            Ħ  ĦSPO            Ħ  ĦLKHD           Ħ  ĦUSAF           Ħ
Ħ               Ħ  Ħ               Ħ  Ħ -24/0         Ħ  Ħ -24/0  -6.000 Ħ  Ħ -24/0  -0.923 Ħ  Ħ -24/0  -8.000 Ħ
ĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦ  5ĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦ5  ĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦ  ĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦ  ĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦ  5ĦĦĦĦĦĦĦĦĦĦĦĦĦĦĦ5
 25NOV85 25NOV85    25NOV85 13DEC85E   16DEC85 27DEC85E   30DEC85 24JAN86E   27JAN86 25JUL86    28JUL86 15AUG86S
```

```
1
02FEB      16FEB      16MAR      11MAY      15MAY      10AUG
87033      87047      87075      87131      87135      87222
839/1      841/1      845/1      853/1      854/0      866/1
```

```
E02FEB87 13FEB87
00441      T2/0
FULL PRODTN
DECISION
USAF
18AUG86 29AUG86S
```

```
16FEB87 13MAR87
00451      T4/0
CONTRACT
AWARD
SPO
24SEP86 21OCT86
```

```
16MAR87 08MAY87
00461      T8/0
CONTRACTOR
FAB & ASSBY
LKHD
-20/3   -2.575
22OCT86 16DEC86
```

```
E11MAY87 14MAY87
00421      T0/4
FIRST HRDWRE
DELIVERED
LKHD
-19/1
26DEC86 31DEC86S
```

```
11MAY87 07AUG87
00471     T13/0
MAX PRODTN
RATE
LKHD
-20/3   -1.584
17DEC86 17MAR87
```

```
E15MAY87 15MAY87
00521      T0/1
FOT&E PRGM
PHASE I
AFOTEC
101/4
27APR89 27APR89
```

```
E15MAY87 11JUN87
00481      T4/0
INITIAL OPS
CAPABILITY
USAFE
-14/4   -3.700
02FEB87 27FEB87S
```

```
E10AUG87 21JUL89
00491   T102/0
FULLY OPS
CAPABILITY
USAFE
-20/3   -0.201
18MAR87 28FEB89S
```

```
1
24JUL              14AUG                15AUG
89205              89226                89227
968/1              971/1                971/2


----------------------------------->

 24JUL89 11AUG89    E14AUG89 14AUG89     E15AUG89 15AUG89
****************    ****************     ****************
* 00501    T3/0 *   * 00511    T0/1 *    * 00531    T0/1 *
*PMRT           *   *DEPLOYMENT     *    *NETWORK        *
*               *****COMPLETE       **   ****STOP        *
*AFSC           *   *USAF           *    *-              *
*               *   *               *    * -15/2         *
****************    ****************     ****************
 07MAR89 27MAR89S    31MAR89 31MAR89S     28APR89 28APR89S
```

Appendix C: Data Set II

Selected Yearly CSNAS Output Products

Appendix C contains the data set II input data listings and subsequent error listings generated by CSNAS for each individual year of the PLSS projected schedule. Also included is the number of tasks and connections for each yearly file.

Data Set II uses the template of reasonable durations derived from perfect knowledge of the PLSS weapon system acquisition process. These durations were applied to all the snapshots to force CSNAS to evaluate the years on a standardized basis.

The last pages of this appendix contain a printer network for snapshot year 1985 and a network plot for snapshot year 1986. The plot was generated by a Houston Instrument desk-top plotter. Both used and portray the template durations of data set II.

gray

DATE: 5SEP86, TIME:00:00:00, FILE: TEMP77.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION	WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK START		100	0	71 1 1A	71 1 1A
11	27/4	AF RQMTS ACTN DIR	AIR STAFF	100	0	71 1 4A	71 715A
21	13/0	DSD DIRECTS TOA/DME SYS	DOD	100	0	71 716A	711014A
31	21/2	AREA COORD PAPER #4	AIR STAFF	100	0	711018A	72 314A
41	8/0	ALSS DEMO IN EUROPE	USAFE	100	0	75 2 3A	75 328A
71	111/0	TAF ROC RELEASED	USAFE 74	100	0	72 316A	74 5 1A
81	0/4	DSARC I	DOD	100	1	7411 1A	7411 6A
91	2/1	PLSS TWO- PHASE PGM	SPO	100	0	75 331A	75 414A
101	3/3	PHASE I RFP RELEASED	SPO	100	0	75 710A	75 8 4A
111	10/2	AWARD OF TWO CONTRACTS	SPO	100	0	76 1 2A	76 315A
121	0/1	PHASE II RFP RELEASED	SPO	100	0	76 721A	76 721A
131	0/1	RECEIVE FSD PROPOSALS	SPO	100	0	76 9 7A	76 9 7A
141	0/2	DSARC IIA	DOD	100	5000	77 725A	77 726A
151	8/0	DSARC APPVL DCP #129	DOD	100	0	77 8 1A	77 923A
161	0/0	FSD CONTRACT AWARD	SPO	100	0	77 930A	77 930A
171	4/1	SYS RQMTS REVIEW	SPO	0	0	78 1 2S	78 131S
181	4/2	SYS DESIGN REVIEW	SPO	0	0	78 5 1S	78 530S
241	4/2	PRELIMINARY DESIGN REVW	SPO	0	1	7811 1S	781130S
201	3/0	DSARC IIB	DOD	0	5000	79 2 1S	79 227S
271	4/2	SYS CRIT DSGN REV	SPO	0	0	79 9 3S	79 928S
281	26/0	PROTOTYPE HDWR BUILT	LKHD	0	1	0 0 0	0 0 0
311	30/1	FULL SYSTEM INTGT START	SPO	0	0	0 0 0	0 0 0
321	4/3	START DT&E/IOT&E	SPO	0	0	81 2 2S	81 227S
361	0/3	END TESTING PROGRAM	AFOTEC	0	1	0 0 0	82 226S
371	3/0	DSARC III	DOD	0	1	82 1 1S	82 129S
441	2/0	FULL PRODTN DECISION	USAF	0	1	0 0 0	0 0 0
401	8/0	CONTRACT AWARD	SPO	0	1	0 0 0	0 0 0
411	26/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
471	13/0	MAX PRODTN RATE	LKHD	0	1	0 0 0	0 0 0
421	0/4	FIRST HRDWRE DELIVERED	LKHD	0	1	0 0 0	0 0 0
481	4/0	INITIAL OPS CAPABILITY	USAFE	0	1001	84 6 1S	84 629S
491	102/0	FULLY OPS CAPABILITY	USAFE	0	1	84 7 2S	86 930S
501	3/0	PMRT	AFSC	0	1	0 0 0	0 0 0
511	0/1	DEPLOYMENT COMPLETE	USAF	0	1	0 0 0	0 0 0
531	0/0	NETWORK STOP	-	0	1	8610 7S	861010S

THERE ARE: 35 TASKS AND , 36 CONNECTIONS ON THIS FILE

TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

S COMPLT FOR TASK# 491 CHGD FROM 86 930 TO 86 917 DUE TO TASK# 501
S COMPLT FOR TASK# 361 CHGD FROM 82 226 TO 82 1 8 DUE TO TASK# 371

gray

DATE: 5SEP86, TIME:00:00:00, FILE: TEMP78.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION		WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK	START		100	0	71 1 1A	71 1 1A
11	27/4	AF RQMTS	ACTN DIR	AIR STAFF	100	0	71 1 4A	71 715A
21	13/0	DSD DIRECTS	TOA/DME SYS	DOD	100	0	71 716A	711014A
31	21/2	AREA COORD	PAPER #4	AIR STAFF	100	0	711018A	72 314A
41	8/0	ALSS DEMO IN EUROPE		USAFE	100	0	75 2 3A	75 328A
71	111/0	TAF ROC	RELEASED	USAFE 74	100	0	72 316A	74 5 1A
81	0/4	DSARC I		DOD	100	1	7411 1A	7411 6A
91	2/1	PLSS TWO-	PHASE PGM	SPO	100	0	75 331A	75 414A
101	3/3	PHASE I RFP	RELEASED	SPO	100	0	75 710A	75 8 4A
111	10/2	AWARD OF TWO CONTRACTS		SPO	100	0	76 1 2A	76 315A
121	0/1	PHASE II RFP RELEASED		SPO	100	0	76 721A	76 721A
131	0/1	RECEIVE FSD PROPOSALS		SPO	100	0	76 9 7A	76 9 7A
141	0/2	DSARC IIA		DOD	100	5000	77 725A	77 726A
151	8/0	DSARC APPVL	DCP #129	DOD	100	0	77 8 1A	77 923A
161	0/0	FSD CONTRACT	AWARD	SPO	100	0	77 930A	77 930A
171	4/1	SYS RQMTS	REVIEW	SPO	100	0	78 1 2A	78 130A
181	4/2	SYS DESIGN	REVIEW	SPO	100	0	78 5 1A	78 530A
241	4/2	PRELIMINARY	DESIGN REVW	SPO	0	1	7811 1S	781130S
201	3/0	DSARC IIB		DOD	0	5000	79 2 1S	79 227S
271	4/2	SYS CRIT	DSGN REV	SPO	0	0	79 9 3S	79 928S
281	26/0	PROTOTYPE	HDWR BUILT	LKHD	0	1	0 0 0	0 0 0
311	30/1	FULL SYSTEM	INTGT START	SPO	0	0	0 0 0	0 0 0
321	0/3	START	DT&E/IOT&E	SPO	0	0	81 2 2S	81 227S
361	52/0	END TESTING	PROGRAM	AFOTEC	0	1	0 0 0	82 226S
371	3/0	DSARC III		DOD	0	1	82 1 1S	82 129S
441	2/0	FULL PRODTN	DECISION	USAF	0	1	0 0 0	0 0 0
401	8/0	CONTRACT	AWARD	SPO	0	1	0 0 0	0 0 0
411	26/0	CONTRACTOR	FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
471	13/0	MAX PRODTN	RATE	LKHD	0	1	0 0 0	0 0 0
421	0/4	FIRST HRDWRE	DELIVERED	LKHD	0	1	0 0 0	0 0 0
481	4/0	INITIAL OPS	CAPABILITY	USAFE	0	1001	84 6 1S	84 629S
491	102/0	FULLY OPS	CAPABILITY	USAFE	0	1	84 7 2S	86 930S
501	3/0	PMRT		AFSC	0	1	0 0 0	0 0 0
511	0/1	DEPLOYMENT	COMPLETE	USAF	0	1	0 0 0	0 0 0
531	0/0	NETWORK	STOP	-	0	1	8610 7S	861010S

THERE ARE: 35 TASKS AND , 36 CONNECTIONS ON THIS FILE

TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

S START FOR TASK# 371 CHGD FROM 82 1 1 TO 82 2 4 DUE TO TASK# 361
S COMPLT FOR TASK# 491 CHGD FROM 86 930 TO 86 917 DUE TO TASK# 501
S COMPLT FOR TASK# 361 CHGD FROM 82 226 TO 82 1 8 DUE TO TASK# 371
S COMPLT FOR TASK# 321 CHGD FROM 81 227 TO 81 1 9 DUE TO TASK# 361

gray

DATE: 5SEP86, TIME:00:00:00, FILE: TEMP79.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION		WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK	START		100	0	71 1 1A	71 1 1A
11	27/4	AF RQMTS	ACTN DIR	AIR STAFF	100	0	71 1 4A	71 715A
21	13/0	DSD DIRECTS	TOA/DME SYS	DOD	100	0	71 716A	711014A
31	21/2	AREA COORD	PAPER #4	AIR STAFF	100	0	711018A	72 314A
41	8/0	ALSS DEMO IN EUROPE		USAFE	100	0	75 2 3A	75 328A
61	60/4	TR-1	SELECTED	DOD	100	0	78 7 3A	79 830A
71	111/0	TAF ROC	RELEASED	USAFE 74	100	0	72 316A	74 5 1A
81	0/4	DSARC I		DOD	100	1	7411 1A	7411 6A
91	2/1	PLSS TWO-	PHASE PGM	SPO	100	0	75 331A	75 414A
101	3/3	PHASE I RFP	RELEASED	SPO	100	0	75 710A	75 8 4A
111	10/2	AWARD OF TWO CONTRACTS		SPO	100	0	76 1 2A	76 315A
121	0/1	PHASE II RFP	RELEASED	SPO	100	0	76 721A	76 721A
131	0/1	RECEIVE FSD PROPOSALS		SPO	100	0	76 9 7A	76 9 7A
141	0/2	DSARC IIA		DOD	100	5000	77 725A	77 726A
151	8/0	DSARC APPVL	DCP #129	DOD	100	0	77 8 1A	77 923A
161	0/0	FSD CONTRACT	AWARD	SPO	100	0	77 930A	77 930A
171	4/1	SYS RQMTS	REVIEW	SPO	100	0	78 1 2A	78 130A
181	4/2	SYS DESIGN	REVIEW	SPO	100	0	78 5 1A	78 530A
191	4/0	ASD PROGRAM	FUNDS CUT	DOD	100	1	7812 1A	781228A
201	0/0	DSARC IIB	CANCELLED	DOD	100	5000	79 2 1A	79 2 1A
221	4/0	FUNDS CAPPED & SHIFTED		DOD	100	1	79 3 1A	79 328A
241	4/2	PRELIMINARY DESIGN REVW		SPO	0	1	7910 1S	791031S
271	4/2	SYS CRIT	DSGN REV	SPO	0	0	7912 3S	791231S
281	20/0	PROTOTYPE	HDWR BUILT	LKHD	0	1	0 0 0	0 0 0
311	30/1	FULL SYSTEM	INTGT START	SPO	0	0	0 0 0	0 0 0
321	0/3	START	DT&E/IOT&E	SPO	0	0	81 2 2S	81 227S
361	52/0	END TESTING	PROGRAM	AFOTEC	0	1	0 0 0	82 226S
371	3/0	DSARC III		DOD	0	1	82 1 1S	82 129S
441	2/0	FULL PRODTN	DECISION	USAF	0	1	0 0 0	0 0 0
401	8/0	CONTRACT	AWARD	SPO	0	1	0 0 0	0 0 0
411	26/0	CONTRACTOR	FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
471	13/0	MAX PRODTN	RATE	LKHD	0	1	0 0 0	0 0 0
421	0/2	FIRST HRDWRE	DELIVERED	LKHD	0	1	0 0 0	0 0 0
481	4/0	INITIAL OPS	CAPABILITY	USAFE	0	1001	84 6 1S	84 629S
491	102/0	FULLY OPS	CAPABILITY	USAFE	0	1	84 7 2S	86 930S
501	3/0	PMRT		AFSC	0	1	0 0 0	0 0 0
511	0/1	DEPLOYMENT	COMPLETE	USAF	0	1	0 0 0	0 0 0
531	0/0	NETWORK	STOP	-	0	1	8610 7S	861010S

THERE ARE: 38 TASKS AND , 42 CONNECTIONS ON THIS FILE

TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

S COMPLT FOR TASK# 491 CHGD FROM 86 930 TO 86 917 DUE TO TASK# 501
S COMPLT FOR TASK# 361 CHGD FROM 82 226 TO 82 1 8 DUE TO TASK# 371
S COMPLT FOR TASK# 321 CHGD FROM 81 227 TO 81 1 9 DUE TO TASK# 361

gray

DATE: 5SEP86, TIME:00:00:00, FILE: TEMP80.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION	WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK START		100	0	71 1 1A	71 1 1A
11	27/4	AF RQMTS ACTN DIR	AIR STAFF	100	0	71 1 4A	71 715A
21	13/0	DSD DIRECTS TOA/DME SYS	DOD	100	0	71 716A	711014A
31	21/2	AREA COORD PAPER #4	AIR STAFF	100	0	711018A	72 314A
41	8/0	ALSS DEMO IN EUROPE	USAFE	100	0	75 2 3A	75 328A
61	60/4	TR-1 SELECTED	DOD	100	0	78 7 3A	79 830A
71	111/0	TAF ROC RELEASED	USAFE 74	100	0	72 316A	74 5 1A
81	0/4	DSARC I	DOD	100	1	7411 1A	7411 6A
91	2/1	PLSS TWO- PHASE PGM	SPO	100	0	75 331A	75 414A
101	3/3	PHASE I RFP RELEASED	SPO	100	0	75 710A	75 8 4A
111	10/2	AWARD OF TWO CONTRACTS	SPO	100	0	76 1 2A	76 315A
121	0/1	PHASE II RFP RELEASED	SPO	100	0	76 721A	76 721A
131	0/1	RECEIVE FSD PROPOSALS	SPO	100	0	76 9 7A	76 9 7A
141	0/2	DSARC IIA	DOD	100	5000	77 725A	77 726A
151	8/0	DSARC APPVL DCP #129	DOD	100	0	77 8 1A	77 923A
161	0/0	FSD CONTRACT AWARD	SPO	100	0	77 930A	77 930A
171	4/1	SYS RQMTS REVIEW	SPO	100	0	78 1 2A	78 130A
181	4/2	SYS DESIGN REVIEW	SPO	100	0	78 5 1A	78 530A
191	4/0	ASD PROGRAM FUNDS CUT	DOD	100	1	7812 1A	781228A
201	0/0	DSARC IIB CANCELLED	DOD	100	5000	79 2 1A	79 2 1A
221	4/0	FUNDS CAPPED & SHIFTED	DOD	100	1	79 3 1A	79 328A
241	4/2	PRELIMINARY DESIGN REVW	SPO	100	1	7910 1A	791030A
231	10/4	SUBMIT PGM RESTRUCTURE	SPO	100	4000	7911 1A	80 115A
271	4/2	SYS CRIT DSGN REV	SPO	0	0	8112 1S	811231S
281	26/0	PROTOTYPE HDWR BUILT	LKHD	0	1	0 0 0	0 0 0
311	30/1	FULL SYSTEM INTGT START	SPO	0	0	0 0 0	0 0 0
321	0/3	START DT&E/IOT&E	SPO	0	0	83 3 1S	83 331S
361	52/0	END TESTING PROGRAM	AFOTEC	0	1	0 0 0	84 228S
371	3/0	DSARC III	DOD	0	1	84 5 1S	84 530S
441	2/0	FULL PRODTN DECISION	USAF	0	1	0 0 0	0 0 0
401	8/0	CONTRACT AWARD	SPO	0	1	0 0 0	0 0 0
411	26/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
471	13/0	MAX PRODTN RATE	LKHD	0	1	0 0 0	0 0 0
421	0/4	FIRST HRDWRE DELIVERED	LKHD	0	1	0 0 0	0 0 0
481	4/0	INITIAL OPS CAPABILITY	USAFE	0	1001	86 9 1S	86 930S
491	102/0	FULLY OPS CAPABILITY	USAFE	0	1	8610 1S	88 930S
501	3/0	PMRT	AFSC	0	1	0 0 0	0 0 0
511	0/1	DEPLOYMENT COMPLETE	USAF	0	1	0 0 0	8810 3S
531	0/1	NETWORK STOP	-	0	1	8810 7S	8810 7S

THERE ARE: 39 TASKS AND , 44 CONNECTIONS ON THIS FILE

TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

S COMPLT FOR TASK# 491 CHGD FROM 88 930 TO 88 9 9 DUE TO TASK# 501
S COMPLT FOR TASK# 481 CHGD FROM 86 930 TO 86 926 DUE TO TASK# 491
S COMPLT FOR TASK# 321 CHGD FROM 83 331 TO 83 3 1 DUE TO TASK# 361

gray

DATE: 5SEP86, TIME:00:00:00, FILE: TEMP81.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION		WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK	START		100	0	71 1 1A	71 1 1A
11	27/4	AF RQMTS	ACTN DIR	AIR STAFF	100	0	71 1 4A	71 715A
21	13/0	DSD DIRECTS	TOA/DME SYS	DOD	100	0	71 716A	711014A
31	21/2	AREA COORD	PAPER #4	AIR STAFF	100	0	711018A	72 314A
41	8/0	ALSS DEMO IN	EUROPE	USAFE	100	0	75 2 3A	75 328A
51	38/3	F16 SELECTED	OVER F-4	AFSC	100	4000	81 1 2A	81 929A
61	60/4	TR-1	SELECTED	DOD	100	0	78 7 3A	79 830A
71	111/0	TAF ROC	RELEASED	USAFE 74	100	0	72 316A	74 5 1A
81	0/4	DSARC I		DOD	100	1	7411 1A	7411 6A
91	2/1	PLSS TWO-	PHASE PGM	SPO	100	0	75 331A	75 414A
101	3/3	PHASE I RFP	RELEASED	SPO	100	0	75 710A	75 8 4A
111	10/2	AWARD OF TWO	CONTRACTS	SPO	100	0	76 1 2A	76 315A
121	0/1	PHASE II RFP	RELEASED	SPO	100	0	76 721A	76 721A
131	0/1	RECEIVE FSD	PROPOSALS	SPO	100	0	76 9 7A	76 9 7A
141	0/2	DSARC IIA		DOD	100	5000	77 725A	77 726A
151	8/0	DSARC APPVL	DCP #129	DOD	100	0	77 8 1A	77 923A
161	0/0	FSD CONTRACT	AWARD	SPO	100	0	77 930A	77 930A
171	4/1	SYS RQMTS	REVIEW	SPO	100	0	78 1 2A	78 130A
181	4/2	SYS DESIGN	REVIEW	SPO	100	0	78 5 1A	78 530A
191	4/0	ASD PROGRAM	FUNDS CUT	DOD	100	1	7812 1A	781228A
201	0/0	DSARC IIB	CANCELLED	DOD	100	5000	79 2 1A	79 2 1A
211	4/2	LONG LEAD $	FOR PRODUCTN	SPO	0	0	0 0 0	83 930S
221	4/0	FUNDS CAPPED	& SHIFTED	DOD	100	1	79 3 1A	79 328A
231	10/4	SUBMIT PGM	RESTRUCTURE	SPO	100	4000	7911 1A	80 115A
241	4/2	PRELIMINARY	DESIGN REVW	SPO	100	1	7910 1A	791030A
251	5/4	WITHDRAWAL	MAJ SYS DES	DOD	100	4000	81 5 1A	81 610A
271	4/2	SYS CRIT	DSGN REV	SPO	0	0	0 0 0	811231S
281	30/2	PROTOTYPE	HDWR BUILT	LKHD	0	1	0 0 0	0 0 0
311	30/1	FULL SYSTEM	INTGT START	SPO	0	0	0 0 0	83 131S
321	0/3	START	DT&E/IOT&E	SPO	0	0	0 0 0	83 930S
361	52/0	END TESTING	PROGRAM	AFOTEC	0	1	0 0 0	84 928S
351	8/0	NATO/USAFE	DEMONSTRAT	USAFE	0	1	0 0 0	85 228S
371	0/0	DSARC III	CANCELLED	DOD	0	1	0 0 0	0 0 0
381	3/0	AFSARC IIIA		USAF	0	5001	0 0 0	8410 1S
391	2/0	LIMITED PROD	DECISION	DOD	0	1	0 0 0	841031S
401	4/0	CONTRACT	AWARD	SPO	0	1	0 0 0	0 0 0
411	26/0	CONTRACTOR	FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
431	3/0	AFSARC IIIB		USAF	0	5001	0 0 0	85 311S
441	2/0	FULL PRODTN	DECISION	USAF	0	1	0 0 0	85 329S
451	4/0	CONTRACT	AWARD	SPO	0	1	0 0 0	0 0 0
461	8/0	CONTRACTOR	FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
471	13/0	MAX PRODTN	RATE	LKHD	0	1	0 0 0	0 0 0
421	0/4	FIRST HRDWRE	DELIVERED	LKHD	0	1	0 0 0	0 0 0
481	4/0	INITIAL OPS	CAPABILITY	USAFE	0	1001	86 9 1S	86 930S
491	102/0	FULLY OPS	CAPABILITY	USAFE	0	1	0 0 0	88 915S
501	2/0	PMRT		AFSC	0	1	0 0 0	0 0 0
511	0/1	DEPLOYMENT	COMPLETE	USAF	0	1	0 0 0	88 930S
531	0/1	NETWORK	STOP	-	0	1	881010S	881011S

gray

DATE: 5SEP86, TIME:00:00:00, FILE: TEMP82.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION	WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK START		100	0	71 1 1A	71 1 1A
11	27/4	AF RQMTS ACTN DIR	AIR STAFF	100	0	71 1 4A	71 715A
21	13/0	DSD DIRECTS TOA/DME SYS	DOD	100	0	71 716A	711014A
31	21/2	AREA COORD PAPER #4	AIR STAFF	100	0	711018A	72 314A
41	8/0	ALSS DEMO IN EUROPE	USAFE	100	0	75 2 3A	75 328A
51	38/3	F16 SELECTED OVER F-4	AFSC	100	4000	81 1 2A	81 929A
61	60/4	TR-1 SELECTED	DOD	100	0	78 7 3A	79 830A
71	111/0	TAF ROC RELEASED	USAFE 74	100	0	72 316A	74 5 1A
81	0/4	DSARC I	DOD	100	1	7411 1A	7411 6A
91	2/1	PLSS TWO- PHASE PGM	SPO	100	0	75 331A	75 414A
101	3/3	PHASE I RFP RELEASED	SPO	100	0	75 710A	75 8 4A
111	10/2	AWARD OF TWO CONTRACTS	SPO	100	0	76 1 2A	76 315A
121	0/1	PHASE II RFP RELEASED	SPO	100	0	76 721A	76 721A
131	0/1	RECEIVE FSD PROPOSALS	SPO	100	0	76 9 7A	76 9 7A.
141	0/2	DSARC IIA	DOD	100	5000	77 725A	77 726A
151	8/0	DSARC APPVL DCP #129	DOD	100	0	77 8 1A	77 923A
161	0/0	FSD CONTRACT AWARD	SPO	100	0	77 930A	77 930A
171	4/1	SYS RQMTS REVIEW	SPO	100	0	78 1 2A	78 130A
181	4/2	SYS DESIGN REVIEW	SPO	100	0	78 5 1A	78 530A
191	4/0	ASD PROGRAM FUNDS CUT	DOD	100	1	7812 1A	781228A
201	0/0	DSARC IIB CANCELLED	DOD	100	5000	79 2 1A	79 2 1A
211	4/2	LONG LEAD $ FOR PRODUCTN	SPO	0	0	0 0 0	841030S
221	4/0	FUNDS CAPPED & SHIFTED	DOD	100	1	79 3 1A	79 328A
231	10/4	SUBMIT PGM RESTRUCTURE	SPO	100	4000	7911 1A	80 115A
241	4/2	PRELIMINARY DESIGN REVW	SPO	100	1	7910 1A	791030A
251	5/4	WITHDRAWAL MAJ SYS DES	DOD	100	4000	81 5 1A	81 610A
261	13/0	PGM RESTART SUBMITTED	SPO	100	4000	8110 1A	811230A
271	4/2	SYS CRIT DSGN REV	SPO	0	0	0 0 0	83 330S
281	30/2	PROTOTYPE HDWR BUILT	LKHD	0	1	0 0 0	0 0 0
311	30/1	FULL SYSTEM INTGT START	SPO	0	0	0 0 0	84 131S
321	0/3	START DT&E/IOT&E	SPO	0	0	0 0 0	84 831S
361	52/0	END TESTING PROGRAM	AFOTEC	0	1	0 0 0	85 731S
351	8/0	NATO/USAFE DEMONSTRAT	USAFE	0	1	0 0 0	85 628S
371	0/0	DSARC III CANCELLED	DOD	0	1	0 0 0	0 0 0
381	3/0	AFSARC IIIA	USAF	0	5001	0 0 0	841015S
391	2/0	LIMITED PROD DECISION	DOD	0	1	0 0 0	841031S
401	4/0	CONTRACT AWARD	SPO	0	1	0 0 0	0 0 0
411	26/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
431	2/0	AFSARC IIIB	USAF	0	5001	0 0 0	85 311S
441	2/0	FULL PRODTN DECISION	USAF	0	1	0 0 0	85 329S
451	4/0	CONTRACT AWARD	SPO	0	1	0 0 0	0 0 0
461	8/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
471	13/0	MAX PRODTN RATE	LKHD	0	1	0 0 0	0 0 0
421	0/4	FIRST HRDWRE DELIVERED	LKHD	0	1	0 0 0	85 430S
481	4/0	INITIAL OPS CAPABILITY	USAFE	0	1001	86 9 1S	86 930S
491	102/0	FULLY OPS CAPABILITY	USAFE	0	1	0 0 0	88 915S
501	2/0	PMRT	AFSC	0	1	0 0 0	0 0 0
511	0/1	DEPLOYMENT COMPLETE	USAF	0	1	0 0 0	88 930S
531	0/1	NETWORK STOP		0	1	0010100	0010115

GRAY

DATE: 5SEP86, TIME:00:00:00, FILE: TEMP83.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION	WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK START		100	0	71 1 1A	71 1 1A
11	27/4	AF RQMTS ACTN DIR	AIR STAFF	100	0	71 1 4A	71 715A
21	13/0	DSD DIRECTS TOA/DME SYS	DOD	100	0	71 716A	711014A
31	21/2	AREA COORD PAPER #4	AIR STAFF	100	0	711018A	72 314A
41	8/0	ALSS DEMO IN EUROPE	USAFE	100	0	75 2 3A	75 328A
51	38/3	F16 SELECTED OVER F-4	AFSC	100	4000	81 1 2A	81 929A
61	60/4	TR-1 SELECTED	DOD	100	0	78 7 3A	79 830A
71	111/0	TAF ROC RELEASED	USAFE 74	100	0	72 316A	74 5 1A
81	0/4	DSARC I	DOD	100	1	7411 1A	7411 6A
91	2/1	PLSS TWO- PHASE PGM	SPO	100	0	75 331A	75 414A
101	3/3	PHASE I RFP RELEASED	SPO	100	0	75 710A	75 8 4A
111	10/2	AWARD OF TWO CONTRACTS	SPO	100	0	76 1 2A	76 315A
121	0/1	PHASE II RFP RELEASED	SPO	100	0	76 721A	76 721A
131	0/1	RECEIVE FSD PROPOSALS	SPO	100	0	76 9 7A	76 9 7A
141	0/2	DSARC IIA	DOD	100	5000	77 725A	77 726A
151	8/0	DSARC APPVL DCP #129	DOD	100	0	77 8 1A	77 923A
161	0/0	FSD CONTRACT AWARD	SPO	100	0	77 930A	77 930A
171	4/1	SYS RQMTS REVIEW	SPO	100	0	78 1 2A	78 130A
181	4/2	SYS DESIGN REVIEW	SPO	100	0	78 5 1A	78 530A
191	4/0	ASD PROGRAM FUNDS CUT	DOD	100	1	7812 1A	781228A
201	0/0	DSARC IIB CANCELLED	DOD	100	5000	79 2 1A	79 2 1A
211	4/2	LONG LEAD $ FOR PRODUCTN	SPO	0	0	0 0 0	841031S
221	4/0	FUNDS CAPPED & SHIFTED	DOD	100	1	79 3 1A	79 328A
231	10/4	SUBMIT PGM RESTRUCTURE	SPO	100	4000	7911 1A	80 115A
241	4/2	PRELIMINARY DESIGN REVW	SPO	100	1	7910 1A	791030A
251	5/4	WITHDRAWAL MAJ SYS DES	DOD	100	4000	81 5 1A	81 610A
261	13/0	PGM RESTART SUBMITTED	SPO	100	4000	8110 1A	811230A
271	4/2	SYS CRIT DSGN REV	SPO	100	0	83 3 1A	83 330A
281	30/2	PROTOTYPE HDWR BUILT	LKHD	100	1	83 4 1A	831031A
291	6/2	REPHASE PGM LENGTH	SPO	100	4000	83 6 1A	83 714A
311	30/1	FULL SYSTEM INTGT START	SPO	0	0	0 0 0	84 530S
321	0/3	START DT&E/IOT&E	SPO	0	0	0 0 0	8410 1S
361	44/0	END TESTING PROGRAM	AFOTEC	0	1	0 0 0	85 731S
351	8/0	NATO/USAFE DEMONSTRAT	USAFE	0	1	0 0 0	85 628S
371	0/0	DSARC III CANCELLED	DOD	0	1	0 0 0	0 0 0
381	3/0	AFSARC IIIA	USAF	0	5001	0 0 0	8410 1S
391	2/0	LIMITED PROD DECISION	DOD	0	1	0 0 0	841015S
401	4/0	CONTRACT AWARD	SPO	0	1	0 0 0	841031S
411	26/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
431	3/0	AFSARC IIIB	USAF	0	5001	0 0 0	85 311S
441	2/0	FULL PRODTN DECISION	USAF	0	1	0 0 0	85 329S
451	4/0	CONTRACT AWARD	SPO	0	1	0 0 0	0 0 0
461	8/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
421	0/4	FIRST HRDWRE DELIVERED	LKHD	0	1	0 0 0	85 430S
471	13/0	MAX PRODTN RATE	LKHD	0	1	0 0 0	0 0 0
481	4/0	INITIAL OPS CAPABILITY	USAFE	0	1001	86 9 1S	86 930S
491	102/0	FULLY OPS CAPABILITY	USAFE	0	1	0 0 0	88 9 1S
501	2/0	PMRT	AFSC	0	1	0 0 0	0 0 0
511	0/1	DEPLOYMENT COMPLETE	USAF	0	1	0 0 0	0 0 0
521	0/1	FOT&E PRGM PHASE I	AFOTEC	0	1	86 228S	0 0 0
531	0/1	NETWORK STOP	-	0	1	0 0 0	881011S

TEMP81.NET

S COMPLT FOR TASK# 391 CHGD FROM 841031 TO 84 723 DUE TO TASK# 401
S COMPLT FOR TASK# 381 CHGD FROM 8410 1 TO 84 7 9 DUE TO TASK# 391
S COMPLT FOR TASK# 351 CHGD FROM 85 228 TO 85 218 DUE TO TASK# 431
S COMPLT FOR TASK# 351 CHGD FROM 85 228 TO 84 618 DUE TO TASK# 371
S COMPLT FOR TASK# 361 CHGD FROM 84 928 TO 84 423 DUE TO TASK# 351
S COMPLT FOR TASK# 321 CHGD FROM 83 930 TO 83 425 DUE TO TASK# 361
S COMPLT FOR TASK# 271 CHGD FROM 811231 TO 8112 2 DUE TO TASK# 281

THERE ARE: 48 TASKS AND , 56 CONNECTIONS ON THIS FILE

TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

TEMP82.NET

THERE ARE: 49 TASKS AND , 57 CONNECTIONS ON THIS FILE

TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

S COMPLT FOR TASK# 441 CHGD FROM 85 329 TO 85 130 DUE TO TASK# 451
S COMPLT FOR TASK# 431 CHGD FROM 85 311 TO 85 116 DUE TO TASK# 441
S COMPLT FOR TASK# 391 CHGD FROM 841031 TO 84 6 6 DUE TO TASK# 401
S COMPLT FOR TASK# 381 CHGD FROM 841015 TO 84 523 DUE TO TASK# 391
S COMPLT FOR TASK# 351 CHGD FROM 85 628 TO 84 5 2 DUE TO TASK# 371
S COMPLT FOR TASK# 361 CHGD FROM 85 731 TO 84 5 2 DUE TO TASK# 371
S COMPLT FOR TASK# 321 CHGD FROM 84 831 TO 84 3 7 DUE TO TASK# 351
S COMPLT FOR TASK# 321 CHGD FROM 84 831 TO 83 5 4 DUE TO TASK# 361
S COMPLT FOR TASK# 311 CHGD FROM 84 131 TO 83 429 DUE TO TASK# 321
S COMPLT FOR TASK# 271 CHGD FROM 83 330 TO 82 3 2 DUE TO TASK# 281
S COMPLT FOR TASK# 211 CHGD FROM 841030 TO 84 5 2 DUE TO TASK# 371

TEMP83.NET

TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

THERE ARE: 51 TASKS AND , 61 CONNECTIONS ON THIS FILE

S COMPLT FOR TASK# 481 CHGD FROM 86 930 TO 86 918 DUE TO TASK# 491
S COMPLT FOR TASK# 441 CHGD FROM 85 329 TO 85 130 DUE TO TASK# 451
S COMPLT FOR TASK# 431 CHGD FROM 85 311 TO 85 116 DUE TO TASK# 441
S COMPLT FOR TASK# 401 CHGD FROM 841031 TO 84 627 DUE TO TASK# 411
S COMPLT FOR TASK# 391 CHGD FROM 841015 TO 84 530 DUE TO TASK# 401
S COMPLT FOR TASK# 381 CHGD FROM 8410 1 TO 84 516 DUE TO TASK# 391
S COMPLT FOR TASK# 351 CHGD FROM 85 628 TO 84 425 DUE TO TASK# 371
S COMPLT FOR TASK# 361 CHGD FROM 85 731 TO 84 425 DUE TO TASK# 371
S COMPLT FOR TASK# 321 CHGD FROM 8410 1 TO 84 229 DUE TO TASK# 351
S COMPLT FOR TASK# 321 CHGD FROM 8410 1 TO 83 622 DUE TO TASK# 361
S COMPLT FOR TASK# 311 CHGD FROM 84 530 TO 83 617 DUE TO TASK# 321

GRAY

DATE: 5SEP86, TIME:00:00:00, FILE: TEMP84.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION	WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK START		100	0	71 1 1A	71 1 1A
11	27/4	AF RQMTS ACTN DIR	AIR STAFF	100	0	71 1 4A	71 715A
21	13/0	DSD DIRECTS TOA/DME SYS	DOD	100	0	71 716A	711014A
31	21/2	AREA COORD PAPER #4	AIR STAFF	100	0	711018A	72 314A
41	8/0	ALSS DEMO IN EUROPE	USAFE	100	0	75 2 3A	75 328A
51	38/3	F16 SELECTED OVER F-4	AFSC	100	4000	81 1 2A	81 929A
61	60/4	TR-1 SELECTED	DOD	100	0	78 7 3A	79 830A
71	111/0	TAF ROC RELEASED	USAFE 74	100	0	72 316A	74 5 1A
81	0/4	DSARC I	DOD	100	1	7411 1A	7411 6A
91	2/1	PLSS TWO- PHASE PGM	SPO	100	0	75 331A	75 414A
101	3/3	PHASE I RFP RELEASED	SPO	100	0	75 710A	75 8 4A
111	10/2	AWARD OF TWO CONTRACTS	SPO	100	0	76 1 2A	76 315A
121	0/1	PHASE II RFP RELEASED	SPO	100	0	76 721A	76 721A
131	0/1	RECEIVE FSD PROPOSALS	SPO	100	0	76 9 7A	76 9 7A
141	0/2	DSARC IIA	DOD	100	5000	77 725A	77 726A
151	8/0	DSARC APPVL DCP #129	DOD	100	0	77 8 1A	77 923A
161	0/0	FSD CONTRACT AWARD	SPO	100	0	77 930A	77 930A
171	4/1	SYS RQMTS REVIEW	SPO	100	0	78 1 2A	78 130A
181	4/2	SYS DESIGN REVIEW	SPO	100	0	78 5 1A	78 530A
191	4/0	ASD PROGRAM FUNDS CUT	DOD	100	1	7812 1A	781228A
201	0/0	DSARC IIB CANCELLED	DOD	100	5000	79 2 1A	79 2 1A
211	4/2	LONG LEAD $ FOR PRODUCTN	SPO	100	0	8410 1A	841030A
221	4/0	FUNDS CAPPED & SHIFTED	DOD	100	1	79 3 1A	79 328A
231	10/4	SUBMIT PGM RESTRUCTURE	SPO	100	4000	7911 1A	80 115A
241	4/2	PRELIMINARY DESIGN REVW	SPO	100	1	7910 1A	791030A
251	5/4	WITHDRAWAL MAJ SYS DES	DOD	100	4000	81 5 1A	81 610A
261	13/0	PGM RESTART SUBMITTED	SPO	100	4000	8110 1A	811230A
271	4/2	SYS CRIT DSGN REV	SPO	100	0	83 3 1A	83 330A
281	30/2	PROTOTYPE HDWR BUILT	LKHD	100	1	83 4 1A	831031A
291	6/2	REPHASE PGM LENGTH	SPO	100	4000	83 6 1A	83 714A
301	4/1	1ST FLT FOR SYS INTEGN	SPO	100	0	8312 1A	831229A
311	30/1	FULL SYSTEM INTGT START	SPO	100	0	84 1 2A	84 730A
321	0/3	START DT&E/IOT&E	SPO	0	0	8410 1A	841031S
361	52/0	END TESTING PROGRAM	AFOTEC	0	1	0 0 0	86 131S
351	8/0	NATO/USAFE DEMONSTRAT	USAFE	0	1	0 0 0	85 628S
371	0/0	DSARC III CANCELLED	DOD	0	1	0 0 0	0 0 0
381	3/0	AFSARC IIIA	USAF	0	5001	85 1 2S	85 131S
391	2/0	LIMITED PROD DECISION	DOD	0	1	0 0 0	85 2 4S
401	4/0	CONTRACT AWARD	SPO	0	1	85 3 1S	85 329S
411	26/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
431	3/0	AFSARC IIIB	USAF	0	5001	0 0 0	85 815S
441	2/0	FULL PRODTN DECISION	USAF	0	1	85 816S	85 830S
451	4/0	CONTRACT AWARD	SPO	0	1	0 0 0	0 0 0
461	8/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
421	0/4	FIRST HRDWRE DELIVERED	LKHD	0	1	86 2 3S	86 228S
471	13/0	MAX PRODTN RATE	LKHD	0	1	0 0 0	0 0 0
481	4/0	INITIAL OPS CAPABILITY	USAFE	0	1001	0 0 0	87 227S
491	102/0	FULLY OPS CAPABILITY	USAFE	0	1	87 3 2S	89 228S
501	2/0	PMRT	AFSC	0	1	0 0 0	89 327S
511	0/1	DEPLOYMENT COMPLETE	USAF	0	1	89 3 1S	89 331S
521	0/1	FOT&E PRGM PHASE I	AFOTEC	0	1	86 228S	0 0 0
531	0/1	NETWORK STOP	-	0	1	89 410S	89 411S

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DATE: 5SEP86, TIME:00:00:00, FILE: TEMP85.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION	WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK START		100	0	71 1 1A	71 1 1A
11	27/4	AF RQMTS ACTN DIR	AIR STAFF	100	0	71 1 4A	71 715A
21	13/0	DSD DIRECTS TOA/DME SYS	DOD	100	0	71 716A	711014A
31	21/2	AREA COORD PAPER #4	AIR STAFF	100	0	711018A	72 314A
41	8/0	ALSS DEMO IN EUROPE	USAFE	100	0	75 2 3A	75 328A
51	38/3	F16 SELECTED OVER F-4	AFSC	100	4000	81 1 2A	81 929A
61	60/4	TR-1 SELECTED	DOD	100	0	78 7 3A	79 830A
71	111/0	TAF ROC RELEASED	USAFE 74	100	0	72 316A	74 5 1A
81	0/4	DSARC I	DOD	100	1	7411 1A	7411 6A
91	2/1	PLSS TWO- PHASE PGM	SPO	100	0	75 331A	75 414A
101	3/3	PHASE I RFP RELEASED	SPO	100	0	75 710A	75 8 4A
111	10/2	AWARD OF TWO CONTRACTS	SPO	100	0	76 1 2A	76 315A
121	0/1	PHASE II RFP RELEASED	SPO	100	0	76 721A	76 721A
131	0/1	RECEIVE FSD PROPOSALS	SPO	100	0	76 9 7A	76 9 7A
141	0/2	DSARC IIA	DOD	100	5000	77 725A	77 726A
151	8/0	DSARC APPVL DCP #129	DOD	100	0	77 8 1A	77 923A
161	0/0	FSD CONTRACT AWARD	SPO	100	0	77 930A	77 930A
171	4/1	SYS RQMTS REVIEW	SPO	100	0	78 1 2A	78 130A
181	4/2	SYS DESIGN REVIEW	SPO	100	0	78 5 1A	78 530A
191	4/0	ASD PROGRAM FUNDS CUT	DOD	100	1	7812 1A	781228A
201	0/0	DSARC IIB CANCELLED	DOD	100	5000	79 2 1A	79 2 1A
211	4/2	LONG LEAD $ FOR PRODUCTN	SPO	100	0	8410 1A	841030A
221	4/0	FUNDS CAPPED & SHIFTED	DOD	100	1	79 3 1A	79 328A
231	10/4	SUBMIT PGM RESTRUCTURE	SPO	100	4000	7911 1A	80 115A
241	4/2	PRELIMINARY DESIGN REVW	SPO	100	1	7910 1A	791030A
251	5/4	WITHDRAWAL MAJ SYS DES	DOD	100	4000	81 5 1A	81 610A
261	13/0	PGM RESTART SUBMITTED	SPO	100	4000	8110 1A	811230A
271	4/2	SYS CRIT DSGN REV	SPO	100	0	83 3 1A	83 330A
281	30/2	PROTOTYPE HDWR BUILT	LKHD	100	1	83 4 1A	831031A
291	6/2	REPHASE PGM LENGTH	SPO	100	4000	83 6 1A	83 714A
301	4/1	1ST FLT FOR SYS INTEGN	SPO	100	0	8312 1A	831229A
311	30/1	FULL SYSTEM INTGT START	SPO	100	0	84 1 2A	84 730A
321	2/3	CNTR INTEGD TSTNG BEGIN	SPO	100	0	841015A	841031A
331	52/0	END CNTR INTEG TEST	LKHD	0	1	0 0 0	851030S
341	6/0	START DT&E/IOT&E	SPO	0	0	0 0 0	851216S
361	4/1	END TESTING PROGRAM	AFOTEC	0	1	0 0 0	86 331S
351	8/0	NATO/USAFE DEMONSTRAT	USAFE	0	1	0 0 0	86 129S
371	0/0	DSARC III CANCELLED	DOD	0	1	0 0 0	0 0 0
381	3/0	AFSARC IIIA	USAF	0	5001	86 4 1S	86 430S
391	2/0	LIMITED PROD DECISION	DOD	0	1	86 6 2S	86 530S
401	4/0	CONTRACT AWARD	SPO	0	1	86 6 2S	86 630S
411	26/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
431	3/0	AFSARC IIIB	USAF	0	5001	86 8 1S	86 815S
441	2/0	FULL PRODTN DECISION	USAF	0	1	86 815S	86 829S
451	4/0	CONTRACT AWARD	SPO	0	1	0 0 0	0 0 0
461	8/0	CONTRACTOR FAB & ASSBY	LKHD	0	1	0 0 0	0 0 0
421	0/4	FIRST HRDWRE DELIVERED	LKHD	0	1	8612 1S	861231S
471	13/0	MAX PRODTN RATE	LKHD	0	1	0 0 0	0 0 0
481	4/0	INITIAL OPS CAPABILITY	USAFE	0	1001	87 2 2S	87 227S
491	102/0	FULLY OPS CAPABILITY	USAFE	0	1	87 3 2S	89 228S
501	3/0	PMRT	AFSC	0	1	0 0 0	89 327S
511	0/1	DEPLOYMENT COMPLETE	USAF	0	1	89 3 1S	89 331S
521	0/1	FOT&E PRGM PHASE I	AFOTEC	0	1	86 228S	0 0 0
531	0/1	NETWORK STOP	-	0	1	89 410S	89 428S

TEMP84.NET

THERE ARE: 52 TASKS AND , 62 CONNECTIONS ON THIS FILE

TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

```
S COMPLT FOR TASK# 401 CHGD FROM 85 329 TO 85 124 DUE TO TASK# 411
S COMPLT FOR TASK# 391 CHGD FROM 85 2 4 TO 841227 DUE TO TASK# 401
S COMPLT FOR TASK# 381 CHGD FROM 85 131 TO 841213 DUE TO TASK# 391
S COMPLT FOR TASK# 351 CHGD FROM 85 628 TO 841122 DUE TO TASK# 371
S COMPLT FOR TASK# 361 CHGD FROM 86 131 TO 841122 DUE TO TASK# 371
S COMPLT FOR TASK# 321 CHGD FROM 841031 TO 84 927 DUE TO TASK# 351
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TEMP85.NET

THERE ARE: 54 TASKS AND , 64 CONNECTIONS ON THIS FILE

TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

```
S COMPLT FOR TASK# 401 CHGD FROM 86 630 TO 86 124 DUE TO TASK# 411
S COMPLT FOR TASK# 391 CHGD FROM 86 530 TO 851227 DUE TO TASK# 401
S COMPLT FOR TASK# 381 CHGD FROM 86 430 TO 851213 DUE TO TASK# 391
S COMPLT FOR TASK# 351 CHGD FROM 86 129 TO 851122 DUE TO TASK# 371
S COMPLT FOR TASK# 361 CHGD FROM 86 331 TO 851122 DUE TO TASK# 371
S COMPLT FOR TASK# 341 CHGD FROM 851216 TO 85 927 DUE TO TASK# 351
S COMPLT FOR TASK# 331 CHGD FROM 851030 TO 85 816 DUE TO TASK# 341
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GRAY

DATE: 5SEP86, TIME:00:00:00, FILE: TEMP86.NET

NETWORK START DATE=71 1 1

TASK ID #	TIME WK/DY	DESCRIPTION		WBS/OPR	PCT COMP	GRP	USER START	USER COMPLT
1	0/0	NETWORK	START		100	0	71 1 1A	71 1 1A
11	27/4	AF RQMTS	ACTN DIR	AIR STAFF	100	0	71 1 4A	71 715A
21	13/0	DSD DIRECTS	TOA/DME SYS	DOD	100	0	71 716A	711014A
31	21/2	AREA COORD	PAPER #4	AIR STAFF	100	0	711018A	72 314A
41	8/0	ALSS DEMO IN EUROPE		USAFE	100	0	75 2 3A	75 328A
51	38/3	F16 SELECTED	OVER F-4	AFSC	100	4000	81 1 2A	81 929A
61	60/4	TR-1	SELECTED	DOD	100	0	78 7 3A	79 830A
71	111/0	TAF ROC	RELEASED	USAFE 74	100	0	72 316A	74 5 1A
81	0/4	DSARC I		DOD	100	1	7411 1A	7411 6A
91	2/1	PLSS TWO-	PHASE PGM	SPO	100	0	75 331A	75 414A
101	3/3	PHASE I RFP	RELEASED	SPO	100	0	75 710A	75 8 4A
111	10/2	AWARD OF TWO	CONTRACTS	SPO	100	0	76 1 2A	76 315A
121	0/1	PHASE II RFP	RELEASED	SPO	100	0	76 721A	76 721A
131	0/1	RECEIVE FSD	PROPOSALS	SPO	100	0	76 9 7A	76 9 7A
141	0/2	DSARC IIA		DOD	100	5000	77 725A	77 726A
151	8/0	DSARC APPVL	DCP #129	DOD	100	0	77 8 1A	77 923A
161	0/0	FSD CONTRACT	AWARD	SPO	100	0	77 930A	77 930A
171	4/1	SYS RQMTS	REVIEW	SPO	100	0	78 1 2A	78 130A
181	4/2	SYS DESIGN	REVIEW	SPO	100	0	78 5 1A	78 530A
191	4/0	ASC PROGRAM	FUNDS CUT	DOD	100	1	7812 1A	781228A
201	0/0	DSARC IIB	CANCELLED	DOD	100	5000	79 2 1A	79 2 1A
221	4/0	FUNDS CAPPED	& SHIFTED	DOD	100	1	79 3 1A	79 328A
231	10/4	SUBMIT PGM	RESTRUCTURE	SPO	100	4000	7911 1A	80 115A
241	4/2	PRELIMINARY	DESIGN REVW	SPO	100	1	7910 1A	791030A
251	5/4	WITHDRAWAL	MAJ SYS DES	DOD	100	4000	81 5 1A	81 610A
261	13/0	PGM RESTART	SUBMITTED	SPO	100	4000	8110 1A	811230A
271	4/2	SYS CRIT	DSGN REV	SPO	100	0	83 3 1A	83 330A
281	30/2	PROTOTYPE	HDWR BUILT	LKHD	100	1	83 4 1A	831031A
291	36/4	REPHASE PGM	LENGTH	SPO	100	4000	8211 1A	83 714A
301	4/1	1ST FLT FOR	SYS INTEGN	SPO	100	0	8312 1A	831229A
311	30/1	FULL SYSTEM	INTGT START	SPO	100	0	84 1 2A	84 730A
321	4/3	CNTR INTEGD	TSTNG BEGIN	SPO	100	0	8410 1A	841031A
211	4/2	LONG LEAD $	FOR PRODUCTN	SPO	100	0	8410 1A	841030A
331	52/0	END CNTR	INTEG TEST	LKHD	0	1	0 0 0	86 811S
435	4/2	PROGRAM	RESTRUCTURE	SPO	100	1	86 4 1A	86 430A
341	6/0	START	DT&E/IOT&E	SPO	0	0	86 812S	8610 1S
361	4/1	END TESTING	PROGRAM	AFOTEC	0	1	87 3 2S	87 331S
400	4/0	PROGRAM	DECISION	USAF	0	1	87 4 1S	87 430S
500	4/0	MOTHBALL	SYSTEM	AFSC	0	1	87 5 1S	87 529S
550	13/0	LTD EUROPE	OPS CAPIBIL	USAFE	0	1	87 6 1S	87 828S
531	0/1	NETWORK	STOP	-	0	1	87 929S	87 930S

THERE ARE: 41 TASKS AND , 51 CONNECTIONS ON THIS FILE

TASK # 1 HAS NO PREDECESSORS
TASK # 531 HAS NO SUCCESSORS

1985 CSNAS Template Printer Network

The next sixteen pages are the CSNAS printer network generated when data set II for the final "classic deployment" snapshot year 1985 was executed by CSNAS.

```
GRAY
1
01JAN                 04JAN                16JUL
71001                 71004                71197
000/0                 000/1                028/0


A01JAN71 01JAN71
****************
* 00001    T0/0 *
*NETWORK        *
*START          *->o
*               *
*               *
****************
 01JAN71 01JAN71A

                  A04JAN71 15JUL71   A16JUL71 140CT71
                  ****************   ****************
                  * 00011   T27/4 *  * 00021   T13/0 *
                  *AF RQMTS       *  *DSD DIRECTS    *
                o-*ACTN DIR       *****TOA/DME SYS   *---
                  *AIR STAFF      *  *DOD            *
                  *               *  *         0.000 *
                  ****************   ****************
                   04JAN71 15JUL71A   16JUL71 140CT71A
```

```
1
 180CT             16MAR             01NOV             03FEB
 71291             72076             74305             75034
 041/1             062/4             200/0             213/1


--------------------------------------------------------------------------


                                                         A03FEB75 28MAR75
                                                         ****************
                                                         * 00041    T8/0 *
                                                         *ALSS DEMO IN   *
---------------------------------------------------------* EUROPE        *
                                                         *USAFE          *
                                                         *         0.000 *
                                                         ****************
                                                          03FEB75 28MAR75A


--------------------------------------------------------------------------


A180CT71 14MAR72     A16MAR72 01MAY74     A01NOV74 06NOV74
****************     ****************     ****************
* 00031   T21/2 *    * 00071  T111/0 *    * 00081    T0/4 *
*AREA COORD     *    *TAF ROC        *    *DSARC I        *
*PAPER #4       *----*RELEASED       *----*               *------------
*AIR STAFF      *    *USAFE 74       *    *DOD            *
*               *    *               *    *         0.000 *
****************     ****************     ****************
 180CT71 14MAR72A     16MAR72 01MAY74A     01NOV74 06NOV74A


--------------------------------------------------------------------------


--------------------------------------------------------------------------
```

1

```
31MAR          10JUL          02JAN
75090          75191          76002
221/1          235/4          261/0

*>0

 A31MAR75 14APR75   A10JUL75 04AUG75   A02JAN76 15MAR76
 ****************   ****************   ****************
 * 00091    T2/1 *  * 00101    T3/3 *  * 00111   T10/2 *
 *PLSS TWO-      *  *PHASE I RFP    *  *AWARD OF TWO   *
-0***PHASE PGM   *--*RELEASED       *--* CONTRACTS     *--
 *SPO            *  *SPO            *  *SPO            *
 *               *  *         0.000 *  *         0.000 *
 ****************   ****************   ****************
  31MAR75 14APR75A   10JUL75 04AUG75A   02JAN76 15MAR76A
```

```
1
 21JUL               07SEP               25JUL
 76203               76251               77206
 289/3               296/2               342/1
```

```
A21JUL76 21JUL76    A07SEP76 07SEP76    A25JUL77 26JUL77
*****************   *****************   5***************5
* 00121     TO/1 *  * 00131     TO/1 *  * 00141     TO/2 *
*PHASE II RFP    *  *RECEIVE FSD     *  *DSARC IIA       *
* RELEASED       *---*PROPOSALS      *---*               *---
*SPO             *  *SPO             *  *DOD             *
*                *  *                *  *          0.000 *
*****************   *****************   5***************5
 21JUL76 21JUL76A    07SEP76 07SEP76A    25JUL77 26JUL77A
```

```
1
 01AUG                 30SEP                 02JAN
 77213                 77273                 78002
 343/1                 352/0                 365/1

---------------------------------------------------------------

---------------------------------------------------------------

A01AUG77 23SEP77     A30SEP77 30SEP77     A02JAN78 30JAN78
*****************    *****************    *****************
* 00151     T8/0 *   * 00161     T0/0 *   * 00171     T4/1 *
*DSARC APPVL     *   *FSD CONTRACT    *   *SYS RQMTS       *
*DCP #129        *---* AWARD          *---*REVIEW          *---
*DOD             *   *SPO             *   *SPO             *
*                *   *                *   *          0.000 *
*****************    *****************    *****************
 01AUG77 23SEP77A     30SEP77 30SEP77A     02JAN78 30JAN78A

---------------------------------------------------------------

---------------------------------------------------------------
```

```
1
 01MAY          03JUL          01DEC              01FEB
 78121          78184          78335              79032
 382/1          391/1          413/0              421/4



                              A01DEC78 28DEC78
                              ****************
                              * 00191    T4/0 *
                              *ASD PROGRAM    *
------------------------------*FUNDS CUT      *->o  ---------
                              *DOD            *  |
                              *         0.000 *  |
                              ****************   |
                               01DEC78 28DEC78A  |
                                                 |
A01MAY78 30MAY78                                 |  A01FEB79 01FEB79
****************                                 |  5**************5
* 00181    T4/2 *                                |  * 00201    T0/0 *
*SYS DESIGN     *                                |  *DSARC IIB      *
*REVIEW         *--------------------------------o--*CANCELLED      *
*SPO            *                                   *DOD            *
*               *                                   *               *
****************                                    5**************5
 01MAY78 30MAY78A                                    01FEB79 01FEB79A

               A03JUL78 30AUG79
               ****************
               * 00061   T60/4 *
               *TR-1           *
---------------*SELECTED       *-----------------------------------
               *DOD            *
               *               *
               ****************
                03JUL78 30AUG79A
-------------------------------------------------------------------
```

```
1
 01MAR                    01OCT              01NOV              02JAN
 79060                    79274              79305              81002
 425/4                    456/1              460/4              522/0

                                                               A02JAN81 29SEP81
                                                               4**************4
                                                               * 00051   T38/3 *
                                                               *F16 SELECTED   *
---------------------------------------------------------------* OVER F-4      *
                                                               *AFSC           *
                                                               *         0.000 *
                                                               4**************4
                                                                02JAN81 29SEP81A



A01MAR79 28MAR79                            A01NOV79 15JAN80
****************                            4**************4
* 00221    T4/0 *                           * 00231   T10/4 *
*FUNDS CAPPED   *                           *SUBMIT PGM     *
* & SHIFTED     *->o  ----------------------*RESTRUCTURE    *----------------
*DOD            *  |                        *SPO            *
*               *  |                        *         0.000 *
****************   |                        4**************4
 01MAR79 28MAR79A  |                         01NOV79 15JAN80A
                   |
                   |  A01OCT79 30OCT79
                   |  ****************
                   |  * 00241    T4/2 *
                   |  *PRELIMINARY    *
-----------------  o--*DESIGN REVW    *------------------------------------
                   |  *SPO            *
                   |  *               *
                   |  ****************
                   |   01OCT79 30OCT79A
                   |
                   |
-----------------> o

---------------------------------------------------------------------------
```

```
1
 01MAY               01OCT                        01MAR
 81121               81274                        83060
 539/0               560/4                        634/2


---------------------------------->0




                                                        0--------------------



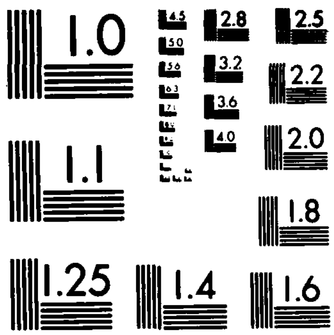
A01MAY81 10JUN81    A01OCT81 30DEC81         A01MAR83 30MAR83
4**************4    4**************4         ****************
* 00251    T5/4 *   * 00261   T13/0 *        * 00271     T4/2 *
*WITHDRAWAL     *   *PGM RESTART    *        *SYS CRIT        *
*MAJ SYS DES    *---*SUBMITTED      *-  0--->0 -*DSGN REV      *---
*DOD            *   *SPO            *        *SPO             *
*               *   *               *        *          0.000 *
4**************4    4**************4         ****************
 01MAY81 10JUN81A    01OCT81 30DEC81A         01MAR83 30MAR83A



---------------------------------->0
```

AD-A174 619 THE APPLICATION OF THE COMPUTER SUPPORTED NETWORK 3/3
ANALYSIS SYSTEM (CSNAS) (U) AIR FORCE INST OF TECH
WRIGHT-PATTERSON AFB OH SCHOOL OF SYST C GRAY SEP 86

UNCLASSIFIED AFIT/GLM/LSY/86S-29 F/G 15/5 NL



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

```
1
01APR               01JUN                    01DEC                   02JAN
83091               83152                    83335                   84002
639/0               647/3                    673/4                   678/1




                    A01JUN83 14JUL83
                    4**************4
                    * 00291    T6/2 *
                    *REPHASE PGM    *
--------------------*LENGTH         *->o
                    *SPO            *  |
                    *               *  |
                    4**************4   |
                     01JUN83 14JUL83A  |
                                       |
A01APR83 31OCT83                       |   A01DEC83 29DEC83    A02JAN84 30JUL84
****************                       |   ****************    ****************
* 00281   T30/2 *                      |   * 00301    T4/1 *   * 00311   T30/1 *
*PROTOTYPE      *                      |   *1ST FLT FOR    *   *FULL SYSTEM    *
*HDWR BUILT     *----------------------o---*SYS INTEGN     *---*INTGT START    *
*LKHD           *                          *SPO            *   *SPO            *
*               *                          *         0.000 *   *         0.000 *
****************                           ****************    ****************
 01APR83 31OCT83A                           01DEC83 29DEC83A    02JAN84 30JUL84A
```

```
1
010CT              150CT              01NOV              310CT
84275              84289              84306              85304
717/1              719/1              721/4              773/4



                  A150CT84 310CT84    01NOV84 300CT85    310CT85 11DEC85
                  ****************    ****************   ****************
                  * 00321    T2/3 *   * 00331   T52/0 *  * 00341    T6/0 *
                  *CNTR INTEGD    *   *END CNTR       *  *START          *
------------------*TSTNG BEGIN    *****INTEG TEST     *****DT&E/IOT&E    *
                  *SPO            *   *LKHD           *  *SPO            *
                  *               *   * -10/3  -0.203 *  * -10/3  -1.766 *
                  ****************    ****************   ****************
                   150CT84 310CT84A   20AUG84 16AUG85E   19AUG85 27SEP85E



A010CT84 300CT84
****************
* 00211    T4/2 *
*LONG LEAD $    *
*FOR PRODUCTN   *--------------------------------------------------
*SPO            *
*               *
****************
 010CT84 300CT84A
```

```
1
     12DEC                  06FEB                 01APR
     85346                  86037                 86091
     779/4                  787/4                 795/2








      12DEC85 05FEB86       06FEB86 06FEB86      S01APR86 21APR86
     ****************       ****************     5**************5
     * 00351    T8/0 *      * 00371    T0/0 *    * 00381    T3/0 *
     *NATO/USAFE     *      *DSARC III      *    *AFSARC IIIA    *
 *>0 **DEMONSTRAT    **  0***CANCELLED      *****                ****
   | *USAFE          *   |  *DOD            *    *USAF           *
   | *               *   |  *               *    * -18/1  -6.066 *
   | ****************    |  ****************     5**************5
   |  30SEP85 22NOV85E   |   25NOV85 25NOV85      25NOV85 13DEC85E
   |                     |
   |  12DEC85 09JAN86    |
   | ****************    |
   | * 00361    T4/1 *   |
   | *END TESTING    *   |
   0***PROGRAM       **>0
     *AFOTEC         *   |
     *               *   |
     ****************    |
      25OCT85 22NOV85E   |
                         |
   ---------------------->0
```

```
1
02JUN                16JUN                14JUL
86153                86167                86195
804/1                806/1                810/1
```

```
S02JUN86 13JUN86     E16JUN86 11JUL86     14JUL86 09JAN87
*****************    *****************    *****************
* 00391     T2/0 *   * 00401     T4/0 *   * 00411    T26/0 *
*LIMITED PROD    *   *CONTRACT        *   *CONTRACTOR      *
* DECISION       *****AWARD           *****FAB & ASSBY     ****
*DOD             *   *SPO             *   *LKHD            *
*                *   *                *   * -24/0   -0.923 *
*****************    *****************    *****************
 16DEC85 27DEC85E     30DEC85 24JAN86E     27JAN86 25JUL86
```

```
1
12JAN              02FEB              16FEB
87012              87033              87047
836/1              839/1              841/1
```

```
E12JAN87 30JAN87   E02FEB87 13FEB87    16FEB87 13MAR87
5***************5  ****************   ****************
* 00431    T3/0 *  * 00441    T2/0 *  * 00451    T4/0 *
*AFSARC IIIB    *  *FULL PRODTN    *  *CONTRACT       *
*               *****DECISION      *****AWARD          ****
*USAF           *  *USAF           *  *SPO            *
*               *  *               *  * -20/3  -5.150 *
5***************5  ****************   ****************
 28JUL86 15AUG86S   18AUG86 29AUG86S   24SEP86 21OCT86
```

```
1
 16MAR                    11MAY                    15MAY
 87075                    87131                    87135
 845/1                    853/1                    854/0



                                                     E15MAY87 15MAY87
                                                     .................
                                                     : 00521     TO/1 :
                                                     :FOT&E PRGM      :
                                                  o--:PHASE I         :-----
                                                  |  :AFOTEC          :
                                                  |  : 101/4          :
                                                  |  .................
                                                  |   27APR89 27APR89
                                                  |
 16MAR87 08MAY87          E11MAY87 14MAY87        |  E15MAY87 11JUN87
*****************         *****************       |  1***************1
* 00461     T8/0 *        * 00421     TO/4 *      |  * 00481    T4/0 *
*CONTRACTOR      *        *FIRST HRDWRE    *      |  *INITIAL OPS    *
*FAB & ASSBY     **>o   ** DELIVERED       **>o   **CAPABILITY       ** o**
*LKHD            *  |     *LKHD            *         *USAFE          *   |
*                *  |     *                *         * -14/4  -3.700 *   |
*****************   |     *****************          1***************1   |
 22OCT86 16DEC86    |      26DEC86 31DEC86S           02FEB87 27FEB87S   |
                    |                                                    |
                    |      11MAY87 07AUG87                               |
                    |     *****************                              |
                    |     * 00471    T13/0 *                             |
                    |     *MAX PRODTN      *                             |
                    o*****RATE             ***************************>o
                          *LKHD            *
                          *                *
                          *****************
                           17DEC86 17MAR87
```

```
1
 10AUG              24JUL              14AUG
 87222              89205              89226
 866/1              968/1              971/1
```

```
E10AUG87 21JUL89    24JUL89 11AUG89    E14AUG89 14AUG89
****************    ****************   ****************
* 00491  T102/0 *   * 00501    T3/0 *  * 00511    T0/1 *
*FULLY OPS      *   *PMRT           *  *DEPLOYMENT     *
*CAPABILITY     *****               *****COMPLETE      ** o**
*USAFE          *   *AFSC           *  *USAF           *
*               *   *               *  * -19/1         *
****************    ****************   ****************
 18MAR87 28FEB89S    07MAR89 27MAR89S   31MAR89 31MAR89S
```

1

15AUG
89227
971/2

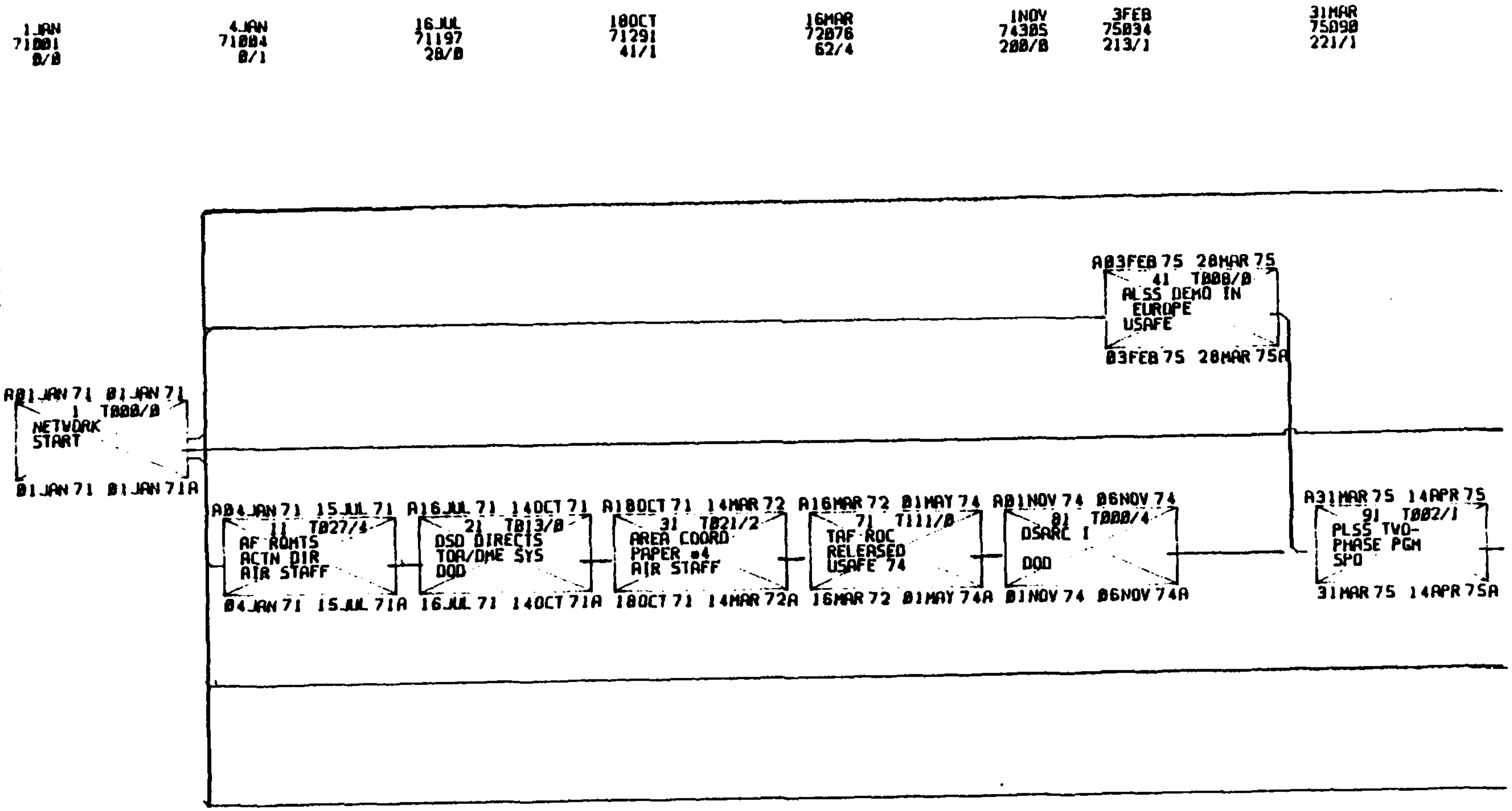
E15AUG89 15AUG89

```
****************
* 00531    TO/1 *
*NETWORK        *
*STOP           *
*-              *
*               *
****************
```

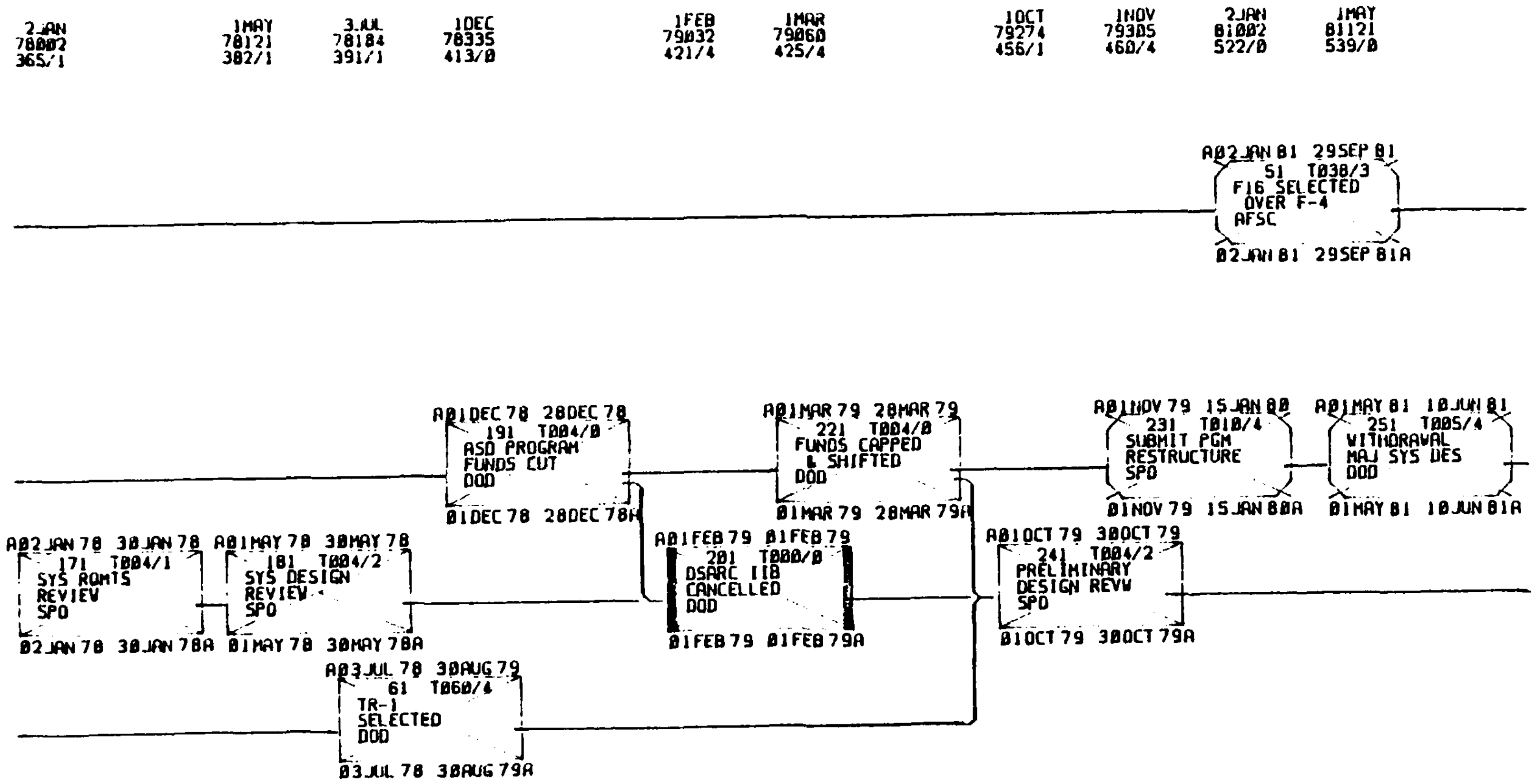
28APR89 28APR89S

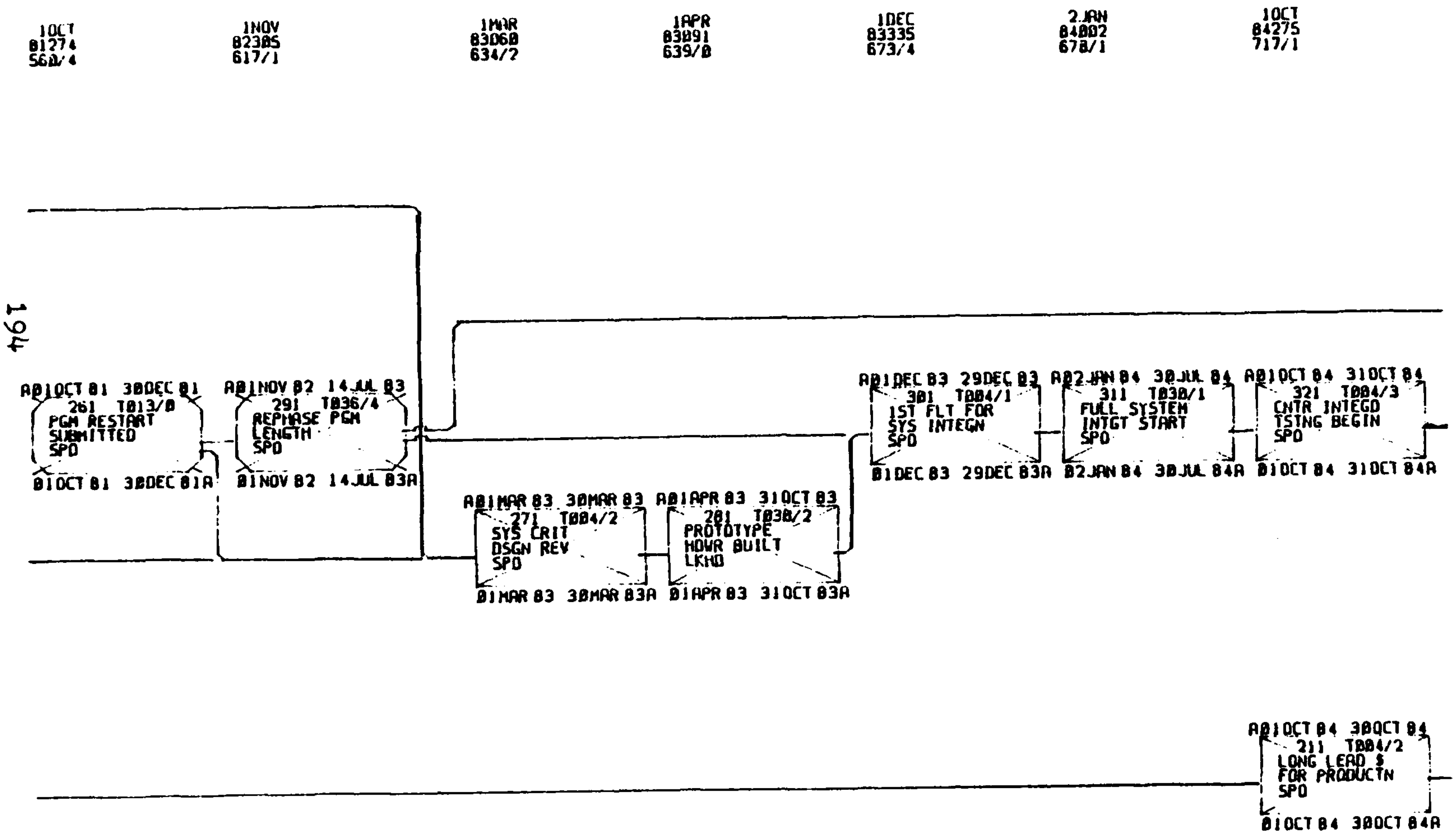
1986 CSNAS Template Network Plot

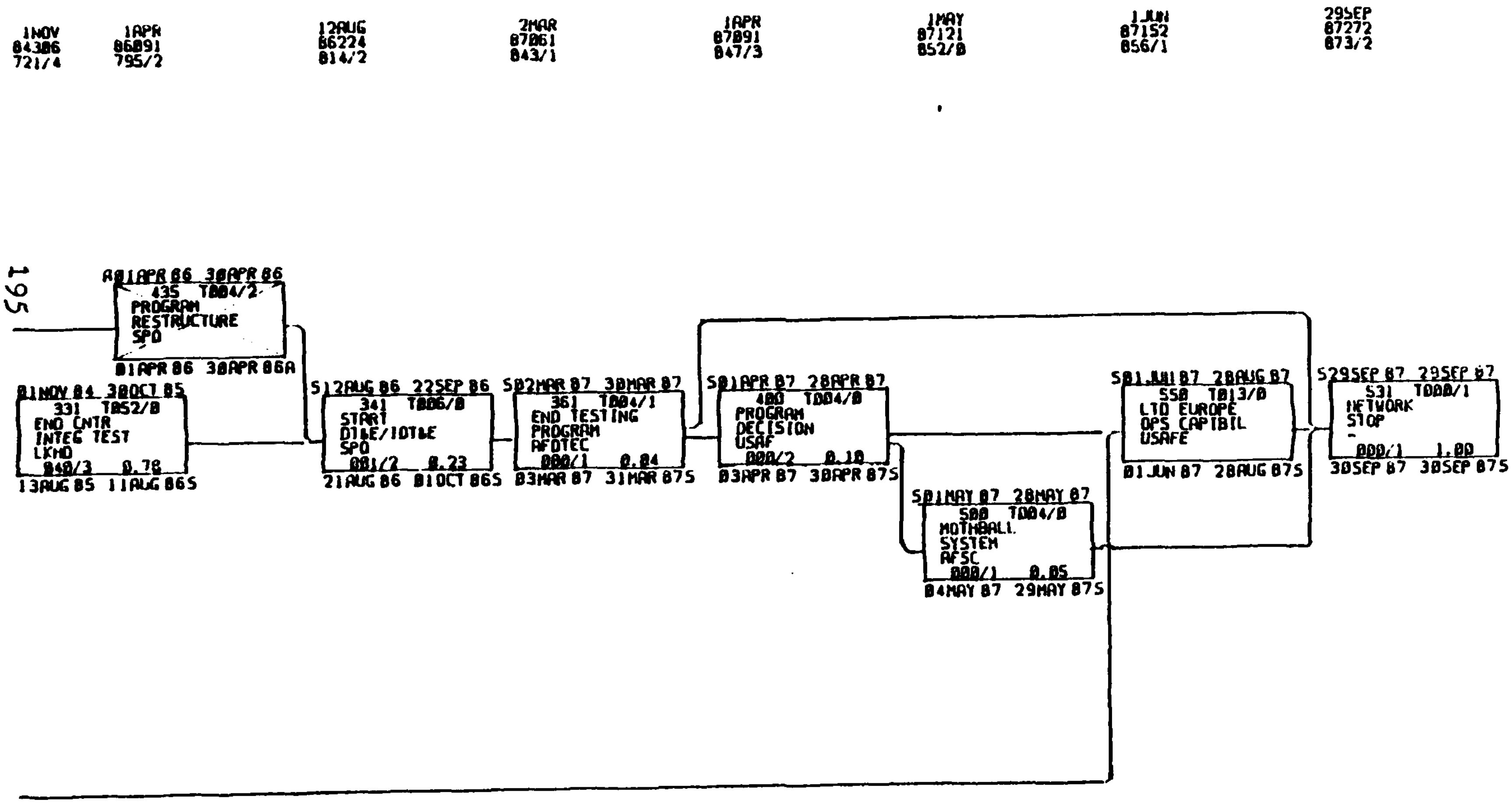
The next five pages are the CSNAS network plot generated when data set II for the final snapshot year 1986 was executed by CSNAS. The network was output to disk and CSNAS routines handled the plotting on a desk-top Houston Instruments plotter.


1JAN 71001 0/0
4JAN 71004 0/1
16JUL 71197 20/0
18OCT 71291 41/1
16MAR 72076 62/4
1NOV 74305 200/0
3FEB 75034 213/1
31MAR 75090 221/1
A01JAN71 01JAN71
1 T000/0
NETWORK START
01JAN71 01JAN71A
A04JAN71 15JUL71
11 T027/4
AF RQMTS ACTN DIR AIR STAFF
04JAN71 15JUL71A
A16JUL71 14OCT71
21 T013/0
OSD DIRECTS TOA/DME SYS DOD
16JUL71 14OCT71A
A18OCT71 14MAR72
31 T021/2
AREA COORD PAPER #4 AIR STAFF
18OCT71 14MAR72A
A16MAR72 01MAY74
71 T111/0
TAF ROC RELEASED USAFE 74
16MAR72 01MAY74A
A01NOV74 06NOV74
81 T000/4
DSARC I
DOD
01NOV74 06NOV74A
A03FEB75 28MAR75
41 T000/0
ALSS DEMO IN EUROPE USAFE
03FEB75 28MAR75A
A31MAR75 14APR75
91 T002/1
PLSS TWO-PHASE PGM SPO
31MAR75 14APR75A

10JUL 75191 235/4	2JAN 76002 261/0	21JUL 76203 289/3	7SEP 76251 296/2	25JUL 77206 342/1	1AUG 77213 343/1	30SEP 77273 352/0
A10JUL 75 04AUG 75	A02JAN 76 15MAR 76	A21JUL 76 21JUL 76	A07SEP 76 07SEP 76	A25JUL 77 26JUL 77	A01AUG 77 23SEP 77	A30SEP 77 30SEP 77
101 T003/3 PHASE I RFP RELEASED SPO	111 T010/2 AWARD OF TWO CONTRACTS SPO	121 T000/1 PHASE II RFP RELEASED SPO	131 T000/1 RECEIVE FSD PROPOSALS SPO	141 T000/2 DSARC IIA DOD	151 T000/0 DSARC APPVL DCP #129 DOD	161 T000/0 FSD CONTRACT AWARD SPO
10JUL 75 04AUG 75A	02JAN 76 15MAR 76A	21JUL 76 21JUL 76A	07SEP 76 07SEP 76A	25JUL 77 26JUL 77A	01AUG 77 23SEP 77A	30SEP 77 30SEP 77A


2JAN 78002 365/1
1MAY 78121 382/1
3JUL 78184 391/1
1DEC 78335 413/0
1FEB 79032 421/4
1MAR 79060 425/4
1OCT 79274 456/1
1NOV 79305 460/4
2JAN 81002 522/0
1MAY 81121 539/0
A02JAN81 29SEP81
51 T030/3
F16 SELECTED OVER F-4
AFSC
02JAN81 29SEP81A
A01DEC78 28DEC78
191 T004/0
ASD PROGRAM FUNDS CUT
DOD
01DEC78 28DEC78A
A01MAR79 28MAR79
221 T004/0
FUNDS CAPPED & SHIFTED
DOD
01MAR79 28MAR79A
A01NOV79 15JAN80
231 T010/4
SUBMIT PGM RESTRUCTURE
SPO
01NOV79 15JAN80A
A01MAY81 10JUN81
251 T005/4
WITHDRAVAL MAJ SYS DES
DOD
01MAY81 10JUN81A
A02JAN78 30JAN78
171 T004/1
SYS RQMTS REVIEV
SPO
02JAN78 30JAN78A
A01MAY78 30MAY78
181 T004/2
SYS DESIGN REVIEV
SPO
01MAY78 30MAY78A
A01FEB79 01FEB79
201 T000/0
DSARC IIB CANCELLED
DOD
01FEB79 01FEB79A
A01OCT79 30OCT79
241 T004/2
PRELIMINARY DESIGN REVW
SPO
01OCT79 30OCT79A
A03JUL78 30AUG79
61 T060/4
TR-1 SELECTED
DOD
03JUL78 30AUG79A


1OCT
81274
560/4
1NOV
82305
617/1
1MAR
83060
634/2
1APR
83091
639/0
1DEC
83335
673/4
2JAN
84002
678/1
1OCT
84275
717/1
A01OCT 81 30DEC 81
261 T013/0
PGM RESTART
SUBMITTED
SPD
01OCT 81 30DEC 81A
A01NOV 82 14JUL 83
291 T036/4
REPHASE PGM
LENGTH
SPD
01NOV 82 14JUL 83A
A01MAR 83 30MAR 83
271 T004/2
SYS CRIT
DSGN REV
SPD
01MAR 83 30MAR 83A
A01APR 83 31OCT 83
281 T030/2
PROTOTYPE
HDWR BUILT
LKHD
01APR 83 31OCT 83A
A01DEC 83 29DEC 83
301 T004/1
1ST FLT FOR
SYS INTEGN
SPD
01DEC 83 29DEC 83A
A02JAN 84 30JUL 84
311 T030/1
FULL SYSTEM
INTGT START
SPD
02JAN 84 30JUL 84A
A01OCT 84 31OCT 84
321 T004/3
CNTR INTEGD
TSTNG BEGIN
SPD
01OCT 84 31OCT 84A
A01OCT 84 30OCT 84
211 T004/2
LONG LEAD $
FOR PRODUCTN
SPD
01OCT 84 30OCT 84A



1NOV 84306 721/4
1APR 86091 795/2
12AUG 86224 814/2
2MAR 87061 843/1
1APR 87091 847/3
1MAY 87121 852/0
1JUN 87152 856/1
29SEP 87272 873/2
A01APR 86 30APR 86
435 T004/2
PROGRAM RESTRUCTURE SPO
01APR 86 30APR 86A
01NOV 84 30OCT 85
331 T052/0
END CNTR INTEG TEST LKMD
040/3 0.78
13AUG 85 11AUG 86S
S12AUG 86 22SEP 86
341 T006/0
START D1&E/IOT&E SPO
001/2 0.23
21AUG 86 01OCT 86S
S02MAR 87 30MAR 87
361 T004/1
END TESTING PROGRAM AFOTEC
000/1 0.04
03MAR 87 31MAR 87S
S01APR 87 28APR 87
400 T004/0
PROGRAM DECISION USAF
000/2 0.10
03APR 87 30APR 87S
S01MAY 87 28MAY 87
500 T004/0
MOTHBALL SYSTEM AFSC
000/1 0.05
04MAY 87 29MAY 87S
S01JUN 87 28AUG 87
550 T013/0
LTD EUROPE OPS CAPTBIL USAFE
01JUN 87 28AUG 87S
S29SEP 87 29SEP 87
531 T000/1
NETWORK STOP
000/1 1.00
30SEP 87 30SEP 87S

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He received his Bachelor of Science in Business Administration from Southern Colorado University in 1976 and received his commission in the USAF through Officers Training School (OTS) in December 1976.

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Weapon system acquisition (WSA) is a lengthy and complicated process which is affected by numerous internal (managerial) and external (environmental) considerations. A program manager must manage and balance these often conflicting requirements to ensure the program remains on track; but often decisions are made without full knowledge of the potential program impact. During the past 25 years, Department of Defense (DOD) weapon system acquisition program managers have used many networking tools to help them plan, schedule, track, control, and report the schedule progress of their programs. Because of the myriad of applications, no "superstar" network has emerged that could capture the DOD spotlight -- but recently, a new candidate, the Computer Supported Network Analysis System (CSNAS), has appeared. Because it is DOD-owned and operated, and because of its portability, it promises to provide unusual flexibility and versatility by attempting to standardize and modularize networking applications in DOD projects.

This investigation evaluates the contribution CSNAS makes to the management of weapon system acquisition by applying it to an existing Aeronautical Systems Division (ASD) program -- the Precision Location Strike System (PLSS). (Thesis).

The analysis was accomplished by using two separate data sets of PLSS projected schedules to create two series of ten yearly CSNAS networks and schedules. Networks were higher-level managerial events, activities and milestones which were important in the WSA process of PLSS.

The analysis centers on comparisons between CSNAS and "classic" networking applications; its similarities and differences, and how effective it is at highlighting discrepancies and providing program managers with a new management and briefing tool which should help manage WSA and other less involved DOD projects.

The results of this investigation indicate that CSNAS is an effective networking application which is useful throughout the entire spectrum of project management.

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